

6-2006

## Gateway Gardens Site Analysis

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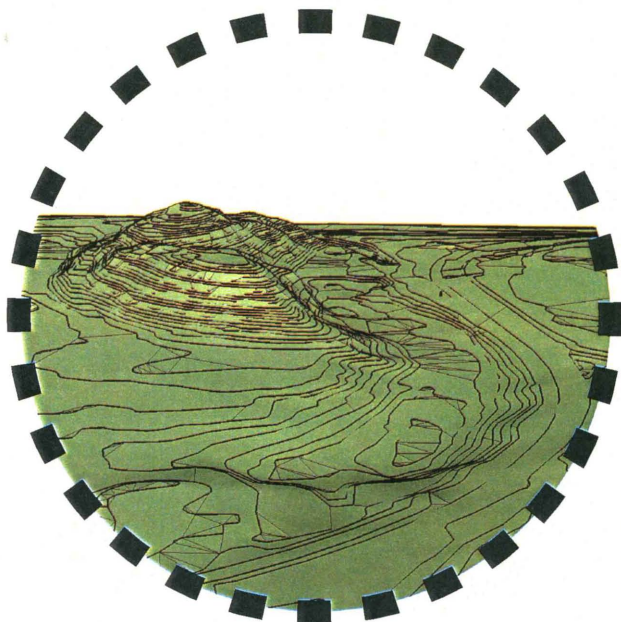
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### Recommended Citation

Gage, Chris; Renfro, Rory; Sarver, Jessica; Sturtz, Ben; and Wolters, Nicole, "Gateway Gardens Site Analysis" (2006). *Master of Urban and Regional Planning Workshop Projects*. Paper 90.  
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# teaway Gardens Site Analysis





# Acknowledgments

The Planning Company is comprised of five graduate students enrolled in the Master's of Urban and Regional Planning Program at Portland State University. The students include Chris Gage, Rory Renfro, Jessica Sarver, Ben Sturtz, and Nicole Wolters. This report represents the students' capstone project in the Master's program.

The efforts in this study are part of a larger exploration by other stakeholders into future programming for the site. We would like to extend a special thanks to the following stakeholders who assisted us in this project:

Mark Raggett, City of Portland Bureau of Planning  
Steve Dotterer, City of Portland Bureau of Planning  
Ted Gilbert, Gilbert Bros. Commercial Development  
Molly Mink Liston, Gilbert Bros. Commercial Development  
Greg Acker, City of Portland Office of Sustainable Development  
Sheila Martin, Portland State University  
Barry Messer, Portland State University  
Larry Olson, Oregon Department of Transportation  
Gary Hunt, Oregon Department of Transportation  
Linda Robinson, Portland Citywide Parks Team  
Kevin Timmins, OTAK  
Tom Liptan, City of Portland Bureau of Environmental Services  
Robert Liberty, Metro Councilor

We would also like to acknowledge the support of other members of the stakeholder group assembled to examine future efforts at the project site. These stakeholder members generously provided their insights and expertise during the course of the project:

Jay Coalson, Green Building Services  
Ralph Di Nola, Green Building Services  
Alan Scott, Green Building Services  
Mike Abbate, GreenWorks  
Tom Puttman, David Evans & Associates  
Mike Houck, Audubon Society of Portland  
Nancy Buley, J. F. Schmidt  
Phil Selinger, Tri-Met

Special thanks also go to our faculty advisors:

Sy Adler, Portland State University  
Deborah Howe, Portland State University  
Connie Ozawa, Portland State University  
Sumner Sharpe, Portland State University

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# Executive Summary

The Gateway Gardens Site Analysis takes a comprehensive look at a largely-vacant land area in Portland's Gateway District. Currently owned by the Oregon Department of Transportation (ODOT), the 38-acre site currently serves as right-of-way for surrounding freeways, namely Interstates 84 and 205.

The project team developed a sequential process for completing this report. To gain an understanding of the project site, the initial step consisted of identifying key historical events and land uses that formed the site into what it is today. The team then conducted an in-depth existing conditions analysis, covering a wide range of elements including natural and man-made characteristics, current uses and management. This analysis also identifies the project site's location within the context of other relevant planning efforts.

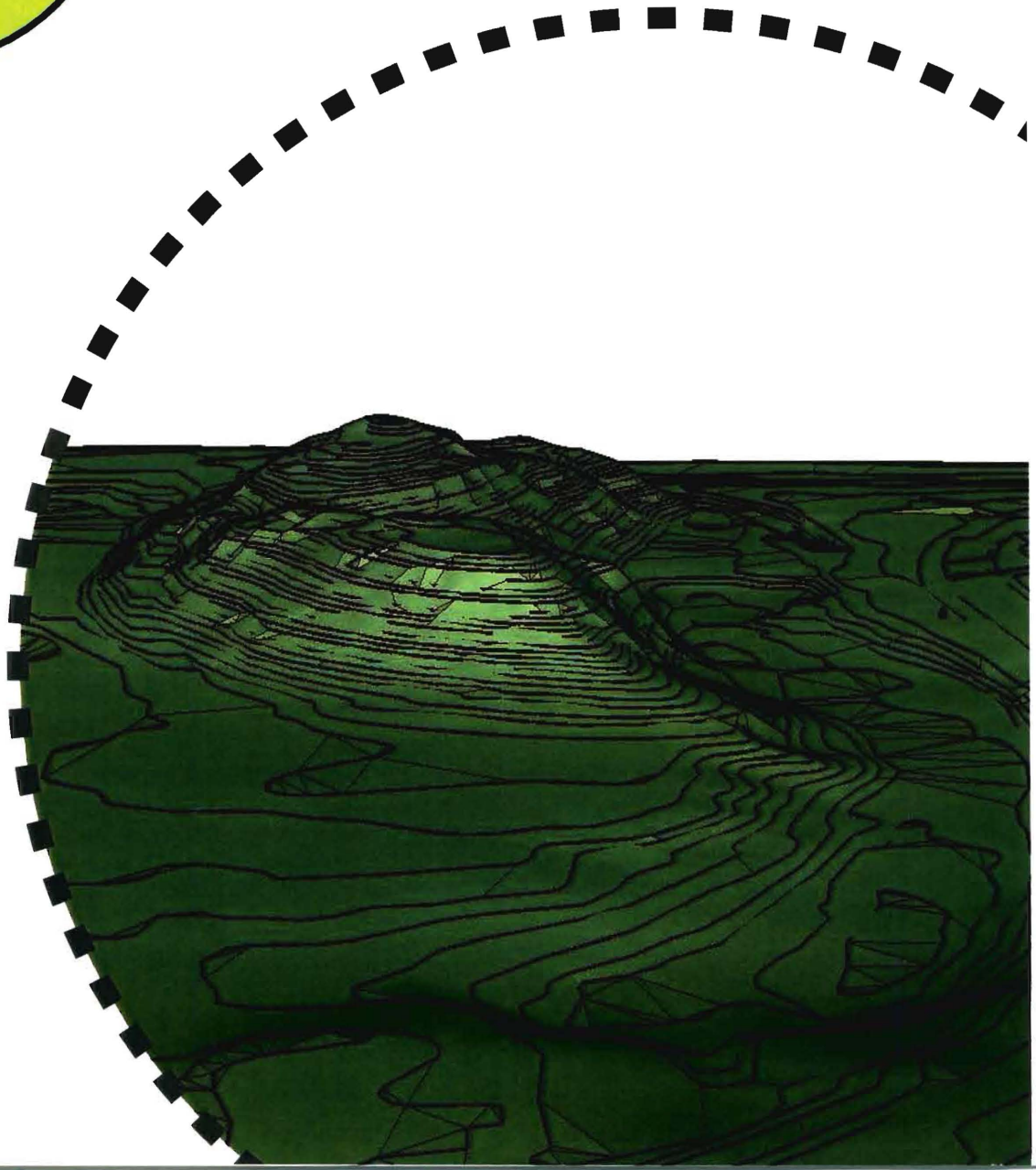
Based on the existing conditions evaluation, the project team developed a series of potential land use elements. The text identifies specific assumptions regarding each element, including land ownership, access provisions, estimated cost and other key variables. The list of uses was developed under the assumption that several elements could potentially co-exist with one another, and that several land use combinations are possible.

It should be noted that this report does not present specific recommendations for the project site; rather it is intended to acquaint readers with the site as it exists today, and to identify the feasibility of various land uses. The project's next step should include a more-detailed evaluation of the potential land use elements along with coordination among relevant agencies and the public to move those uses forward.



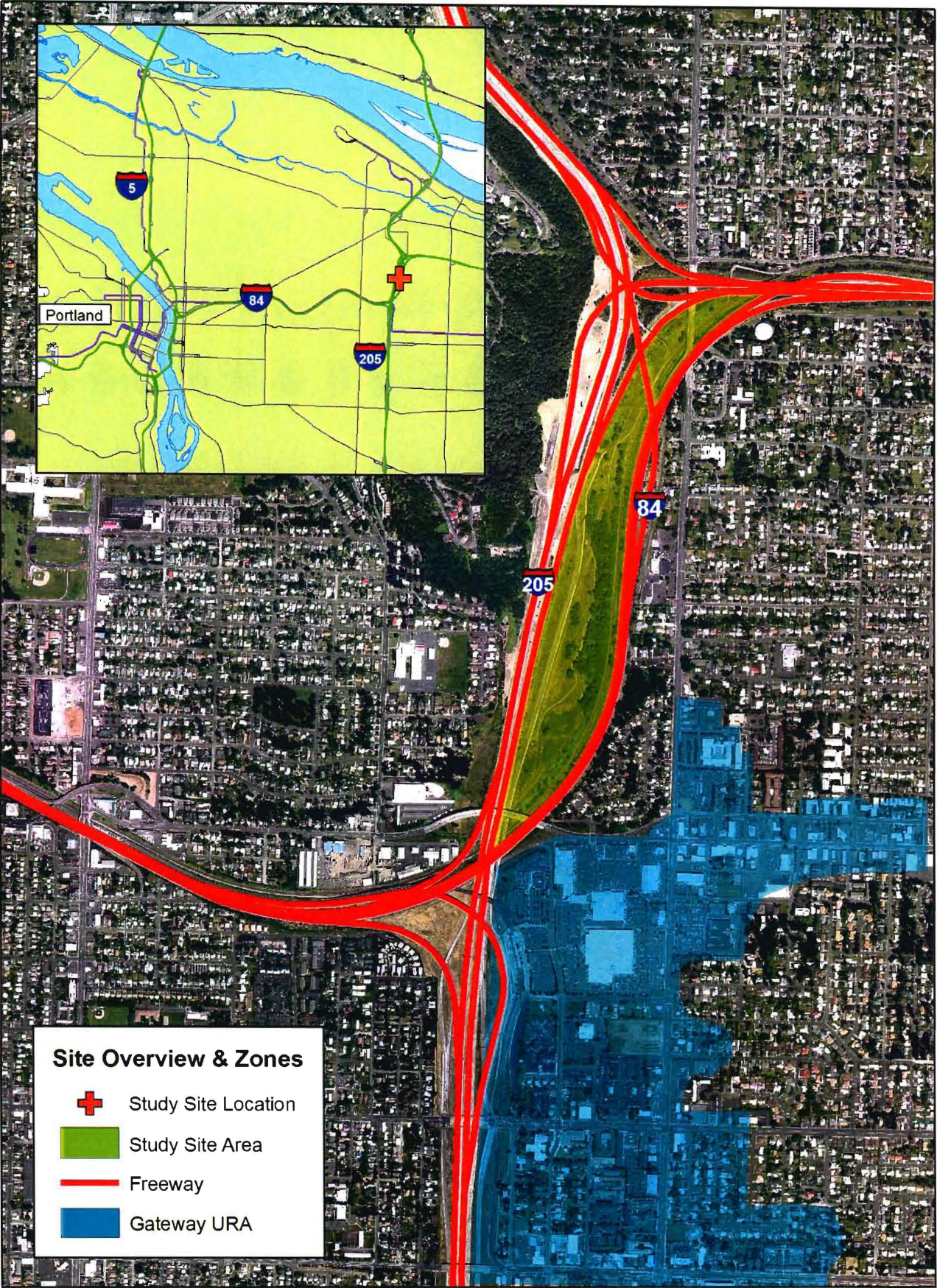


# Site & Project Overview





Map 1 - Context Map





# Introduction

1

The Gateway District is an inner-ring suburb located in northeast Portland, about six miles from the downtown core. The district boasts an extensive transportation network and a centralized location providing easy access to the City's central business district; Vancouver, Washington; the City of Gresham; and Portland International Airport. The district's highly integrated transportation system includes Interstate 205 (I-205) and Interstate 84 (I-84); two light rail lines and several TriMet bus lines converging at the Gateway Transit Center, as well as a regional multi-use trail. Because of the considerable transportation infrastructure, Metro has designated the Gateway District as a regional center. Despite the fact that thousands of travelers from Portland International Airport and neighboring Washington pass through the district (along with thousands of local commuters), it has little identity as a regional center and suffers from underinvestment. Currently, development in the District primarily consists of low-density, suburban-style development including small and medium-sized businesses, big box retail, and a mixture of single-family and multi-family housing, and contains a large stock of aging buildings and vacant lots. The district also lacks a sufficient amount of open space and parks to serve the surrounding population.

Because Gateway lacks a strong identity and has few examples of high-quality architecture, rents for apartments and business space have been historically low. As a result, developers build in other areas where there are higher rents and greater profit margins. A 653-acre Gateway Urban Renewal Area (URA) was created in 2000 to implement Metro's regional center concept and attract private investment. The URA plan (*Opportunity Gateway Concept Plan and Redevelopment Strategy*) proposes upgrades to transportation and open space networks, high-density residential development, expansion of employment opportunities, and new public institutional development. The redevelopment plan recommends that visible projects be completed that will help the URA generate interest from private investors and attract denser and higher quality development. Example projects may include intersection improvements, beautification projects (e.g., landscaping of traffic islands and berms along I-205), park development, and/or education outreach or university satellite facilities.

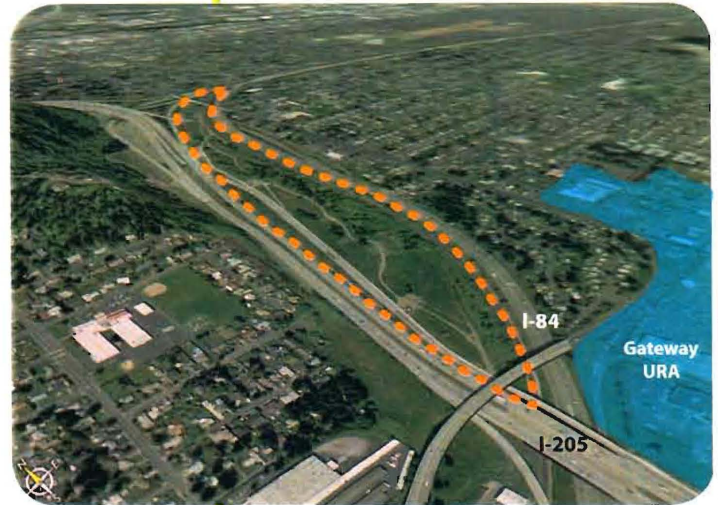
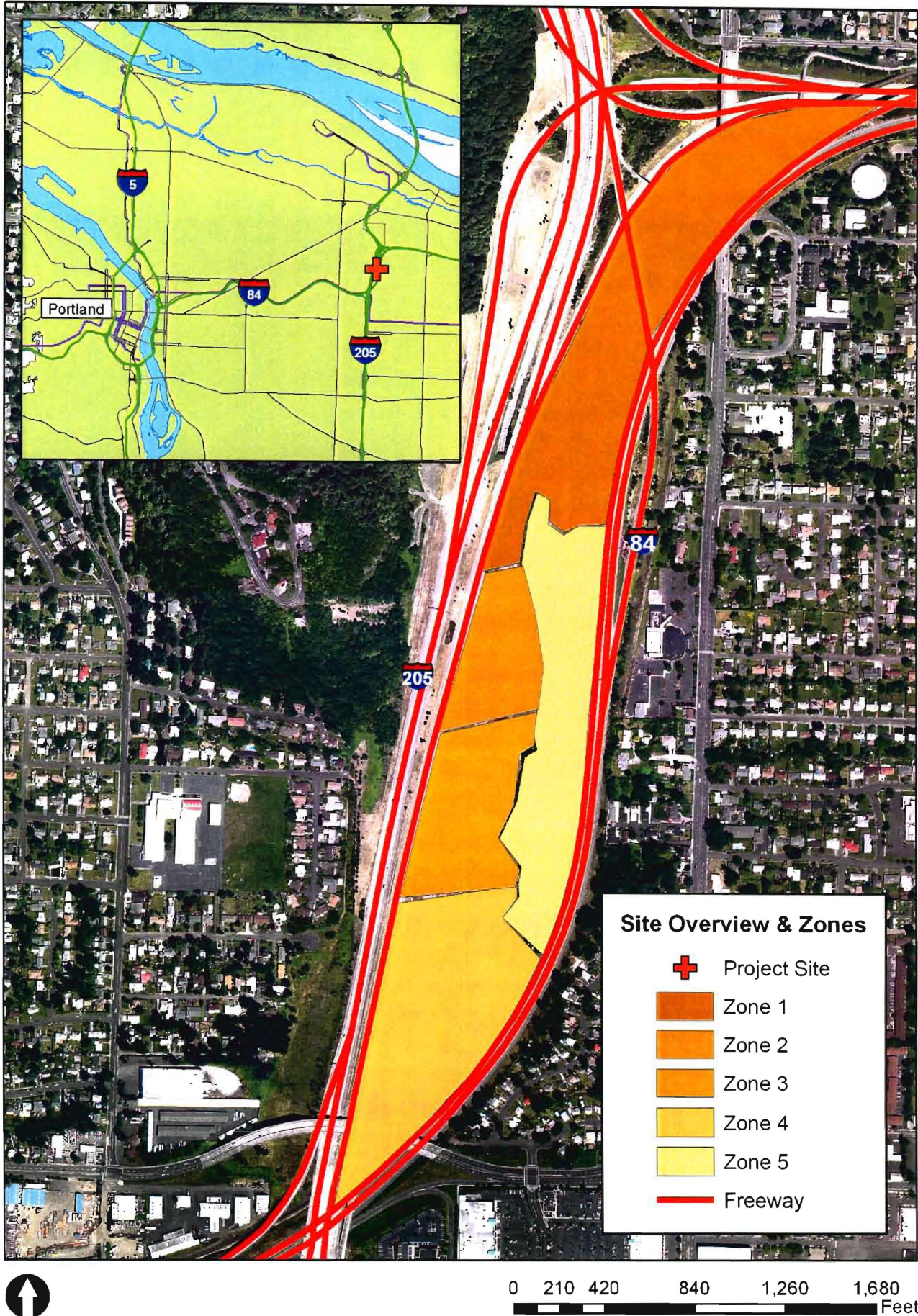


Photo: Google Earth

Aerial Overview of Project Site



Map 2 - Site Overview





# Site Overview

1

The project site is located in the Gateway District approximately six miles east of downtown Portland and is situated directly northwest of the Gateway URA. It is approximately 35 acres in size and is comprised entirely of freeway right-of-way that is owned and managed by the Oregon Department of Transportation (ODOT). The most notable aspect of the site is that it is bounded on all sides by I-205 and I-84. The surrounding freeways pose substantial access limitations that impact the feasibility of potential land uses on the site.

The project site is considered “operating right-of-way”, which means that ODOT has earmarked the land for future mitigation or transportation needs; however, the majority of the site currently lies vacant with the exception of the MAX light rail line and a regional multi-use path the runs through the site near its western boundary. While the project site is not considered to be “surplus” land that can be sold off and developed, ODOT has expressed a willingness to consider transitional uses for the site until the agency requires a portion of or the entire site for transportation or mitigation purposes. A letter from ODOT acknowledging the agency’s concerns and constraints, is attached in Appendix B.

Prior to the construction of I-205 and I-84, the project site was occupied by the Multnomah County Rocky Butte Jail. Originally constructed in 1941, the County closed the facility in 1983 and ODOT subsequently purchased the site to construct I-205. After the freeway was constructed, the large eastern portion of the former jail facility became operating right-of-way (the current project site), and the western portion abutting the west side of I-205 became primarily a state park and residential neighborhood. Remnant water, sewer, and stormwater infrastructure from the jail still lie beneath the project site.

## At A Glance

***Project Site: approximately 38 acres***

***Owner: Oregon Department of Transportation (ODOT)***

***Official Uses: Active ODOT right-of-way, MAX and bicycle/ pedestrian corridor***

***Located directly adjacent and north of the Gateway Urban Renewal Area***



Photo: Multnomah County

Rocky Butte Prison circa 1945



2

## Physical Characteristics







# Introduction

2

The project site is highly visible from several modes of transportation and has been identified by stakeholders as one of the largest publicly owned, undeveloped parcels in the region. Nevertheless, very little information was known about the site at the inception of this project. As such, the primary objective of Part 2 is to review the project site's existing conditions in order to take inventory and assess the site's current physical characteristics and existing uses. The physical features detailed in the following sections were chosen based on the advice, momentum and expertise of the existing stakeholder group and clients (see Acknowledgments). Information derived from Part 2 was then used to better interpret the potential practicality of alternative uses identified and documented in Part 4.



Wooded area in Zone 5



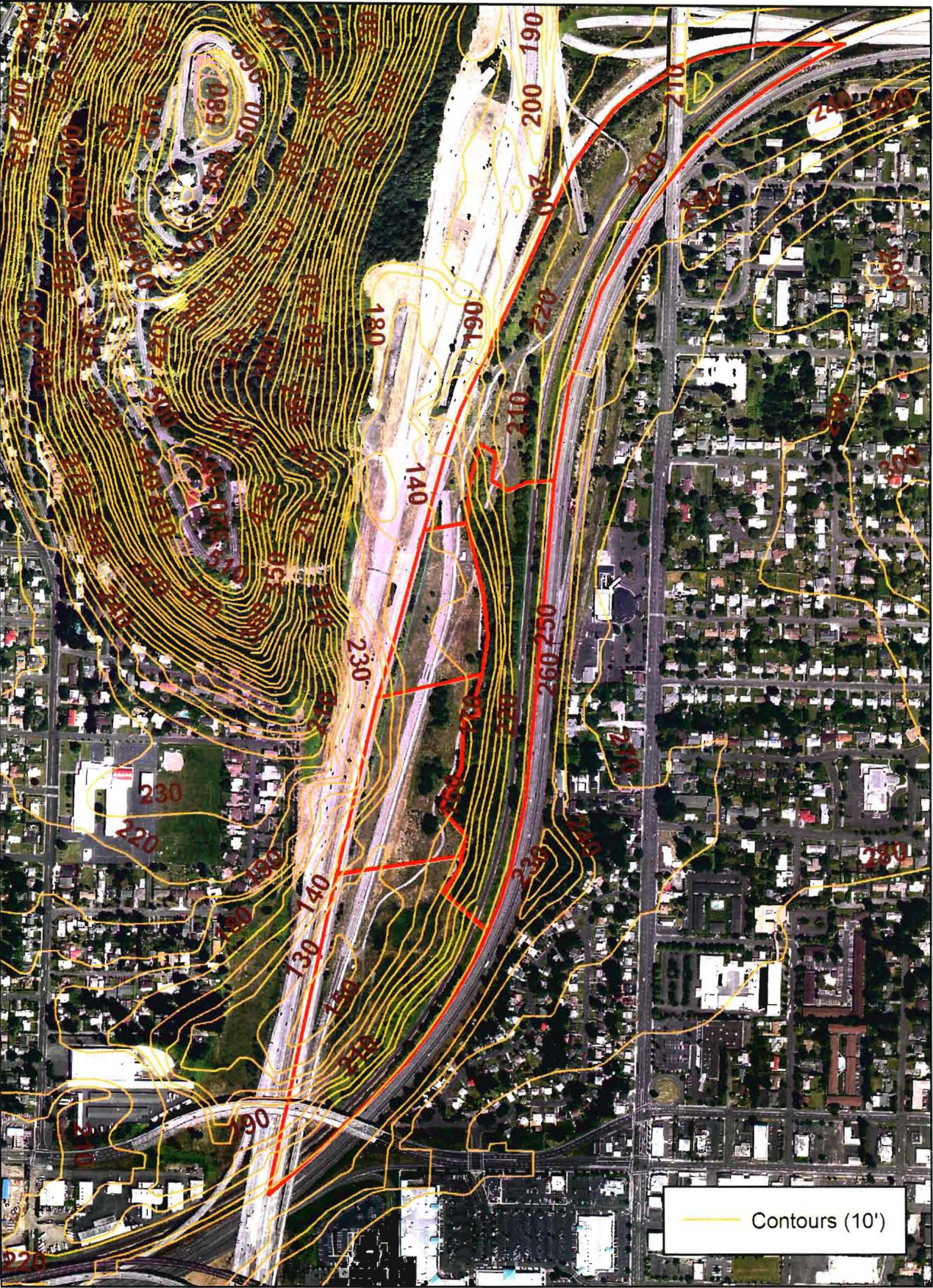
Hill in south section of Zone 4



Low area of bowl



Map 1 - Topography





# Topography

2

## Why

The shape of the project site plays a large role in determining what uses and combination of uses best suit it. Its unique shape and topographical relief is important to identify in order to understand the “lay of the land” and as a general introduction to the site.

## How

Site topography was determined through ground observations and mapped using Metro RLIS GIS data at 10-foot contours.

## Findings

In general, the project site is oblong and concave in shape. The existing topography was largely created through the development of both of the abutting freeways and railways. Buried pieces of the old Banfield Freeway have created the hill located on the southern end of the project site (Zone 4), which constitutes the site's highest elevation at 260 feet above mean sea level (MSL). The project site's lowest elevation (160 feet MSL) is located in Zone 3. This central depressional area was excavated to provide fill for I-205, and excess fill and freeway construction waste was buried in Zone 1.

On the northern end of the project site, topography gently slopes south to a short, steep hill at the southern end of Zone 1. The hill leads to a relatively flat terrace in Zone 2 before dropping into an excavated concave basin in Zone 3. Zone 3 is the lowest elevational area within the project site and was originally planned as a wetland mitigation and detention facility to collect stormwater runoff from the two adjacent freeways and railroad. Small undulating mounds within this area were originally created to provide habitat islands and some variety in topography. However, the soils proved too rocky and as a result, the basin never ponded water. Nevertheless, the mounds are a unique topographical feature within the project site.

Zone 5 marks the central eastern boundary of the project site. This area is heavily forested and in some places, steeply sloped from the railroad to the basin floor. The zone's established and extensive vegetation is indicative of topography that appears to have escaped historic development.

## At A Glance

***Concave in shape***

***Created through the development of I-84 and I-205***

***100 feet in elevation change from the freeways to the project site's floor***



Looking North onto the Project Site



Map 2 - Vegetation





# Vegetation

2

## Why

The project site is largely vegetated and as such, it is important to gain a sense of what is currently growing and how much of it is native. This information helps to understand how environmentally intact the site is and to what extent improvements could be made to enhance its ecological functionality.

## How

Onsite plant surveys were conducted in April 2006. Species names were collected during field visits. The project team walked each zone and collected all species observed. The survey resulted in a comprehensive list of native and nonnative tree, shrub, and groundcover species within the project site (see tables in Appendix A).

## Findings

The map (opposite page) shows a general overview of vegetation types on-site. Approximately 65% of groundcover in Zones 1 to 4 is comprised of nonnative plants. The density and growth of vegetation across this area correlates to the level of soil compaction and undoubtedly the amount of concrete debris within the soil profile. Although ground cover species are similar across the open basin, compact, thin soils in Zones 1, 2, and the flat areas of Zone 4 support minimal vegetative growth. Less compact and deeper soils in Zone 3, on the southern end of Zone 4, and the forested area of Zone 5 show increased vegetative growth and density.

Remnant native tree species dot portions of the open meadow landscape in Zones 1-4. The most prominent are clusters of black cottonwood located within wetland pockets in Zone 3.

The greatest extent of native vegetation is in the forested area of Zone 5. This sloped area from the railroad tracks to the project site's floor supports large Douglas-fir trees up to 45 inches in diameter. Only 31% of species in this area are nonnative, however, groundcover is heavily dominated (approximately 80%) by non-native and invasive English ivy, with some Himalayan blackberry. The ivy has climbed into the trees and engulfed tree trunks. Nevertheless, this zone's dense canopy provides shade and serves an important function in moderating urban temperatures. Moreover, the zone provides a noise and visual buffer between the railroad tracks and I-84 and the meadowlands and I-205 multi-use path where human activities occur.

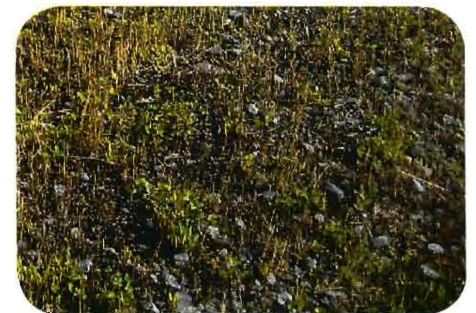
## At A Glance

**65% of groundcover in meadowland is nonnative (Zones 1-4)**

**Poor soils truncate vegetation growth of groundcover species**

**69% of species in Zone 5 (forested area) are native, but the zone is largely invaded by nonnative English ivy**

**Large, roughly 45-inch diameter Douglas-fir trees are located in Zone 5**



Rocky soils



Map 3 - Habitat





# Habitat Availability

2

## Why

Because the site is located within an urban area, opportunities for wildlife habitat should be recognized and documented. This section provides an overview of habitat type, quality and quantity on-site.

## How

Wildlife habitat surveys were conducted in April 2006. Surveys were informal and opportunistic, based on observations while walking the site. Results are shown on the map (opposite page).

## Findings

In general, habitat availability within the project site is limited. Both free-ways create considerable noise, and access to the site is disconnected from surrounding habitat corridors making it difficult for larger wildlife such as deer to move through and utilize it. In addition, poor soils across zones 1-4 support minimal plant coverage for foraging opportunities except in isolated areas of Zone 3 where overhead trees and nutrient rich soils support dense vegetation (see Vegetation Section).

Compared with the open meadowlands, Zone 5 is relatively quiet and isolated from bicycle and pedestrian activities as well as off-leash dogs. Transients move through this zone, but their sporadic presence likely does not deter wildlife from utilizing it. Nevertheless, limited forage opportunities exist since the zone does not support enough diversity in plant species.

Only bird species were observed during field visits. Other signs of wildlife presence (e.g., tracks and/or feces) were not detected. Turkey vultures and hawks were routinely observed circling the project site and Rocky Butte. The site's open meadowlands provide good unobstructed views and clear line-of-sight for scavenging and foraging opportunities. However, human activities and the presence of dogs may hinder the extent to which these animals are able to utilize these grounds.

Nonnative pigeons and starlings, and native killdeer were also observed. These bird species are well adapted to urban environments and occur in urban areas with significantly less greenspace than the project site. The site's open meadowlands provide good nesting opportunities for killdeer. The species nests on open ground, often on gravel.

## At A Glance

***Site location, limited access, and past disturbances compromise available wildlife habitat***

***Surveys noted common songbirds and raptors***





Map 4 - Soils





# Soils

2

## Why

Understanding soil composition is important for any future planning activities that require the manipulation or use of soils on-site as well as for stormwater management.

## How

Soil surveys were conducted in April 2006. A total of 10 pits were dug across the project site. Sample pit locations were chosen within each sub-zone based on topographical relief. Special attention was paid to the low pockets in Zone 3 because of their potential wetland characteristics. Pit locations were mapped using GPS. Results are shown on the map (opposite page).

## Findings

According to the Multnomah County Soil Survey, native soils within the project site are mapped as Multnomah silt loam. These soils are rocky and well-drained. However, a large portion of the project site is mapped as Urban Land Complex indicating that decades of soil disturbance and mixing of soils originating outside of the project site have rendered native soils unrecognizable. As the following findings indicate, this is true of existing soil conditions within the project site.

Soils within the project site reflect a history of development. Cut and fill activities have greatly disturbed the native soil complex. The base of the study site (Zones 2 and 3) has been scraped and moved to adjacent zones. Moreover, pieces of the original Banfield Freeway are buried in Zone 4. As a result, little topsoil exists across all zones except in the lowest topographical areas where stormwater deposits fresh sediment. Across all zones, varying sizes of concrete and rebar scrap lie scattered on the ground and within a foot from the soil's surface. As such, sample soil pits from Zones 1 and 2 and within the upland portions of Zone 3 were shallow from only 3 to 10 inches (Table 3, Appendix A). Although soils within Zones 1, 2, 4, and portions of Zone 3 are gritty, rocky, and well-drained, the compactness of these soils puddles water. Low lying pockets of Zone 3 exhibit wetland characteristics such as mottling and may be considered jurisdictional wetland features while adjacent upland soils revealed dark organic soils, which are rich in nutrients and good for growing.

The project site was originally constructed as a wetland to mitigate impacts due to increased stormwater runoff from I-205. However, as indicated above, the site's rocky well-drained soils were not conducive to holding water and therefore, the mitigation never properly functioned.

## At A Glance

***Largely disturbed, compact soils***

***Gravels, cobbles and highway debris such as concrete chunks and rebar exist across the project site***

***Wet, dark organic soils are located in Zone 3 where wetland pockets exist***





Map 5 - Hydrology





# Hydrology

2

## Why

Because the site is enclosed by I-205 and I-84, the area plays an important role in stormwater management. Understanding how well and to what extent the site drains stormwater is important to determine how compatible the site is with other uses.

## How

Hydrology data was collected via field observations as well as from a report prepared by Otak for ODOT detailing the future capacity for the site to management increasing volumes of stormwater (Otak 2002). Results are shown on the map (opposite page).

## Findings

The project site is located within the Willamette River watershed and more specifically, the Outer East sub-watershed basin. Stormwater and direct rainfall appear to be the only hydrology inputs to the project site. No streams, seeps, or springs were detected during field visits. Because of the site's concave topography, stormwater drains downhill towards a central collection area in Zone 3 (see Vegetation Section). Here, sinuous, depressional pockets pond water during high rain events as evidenced by soil deposits, stained leaves and debris, as well as a lack of vegetation.

Annual rainfall in Portland is approximately 36 inches. However, the volume of stormwater reaching the project site is marginalized due to a stormwater conveyance system underground that quickly drains both freeways and the MAX light rail. The system consists of a series of pipes connecting to a larger mainline located underneath and paralleling the west side of I-205. The mainline channels stormwater north, untreated, into the Columbia River. The greatest concentration of stormwater flows from the multi-use path where a 6-inch PVC pipe drains water from the path at the southern end of the project site to Zone 3. The project site's relatively compact soils also tend to puddle precipitation in portions of Zones 2 and 3.

There is no piped outlet from the project site, but the site's rocky soils allow stormwater to infiltrate. An 18-inch pipe drains some water from the stormwater conveyance system to an outfall located within a depressional pocket in Zone 3. The pipe appears seasonal and may serve as an overflow drain.

## At A Glance

***Hydrology inputs include stormwater and direct precipitation***

***The concave shape of the project site directs stormwater and runoff to Zone 3***

***Potential wetland pockets exist in Zone 3***

***Highway/railway stormwater piped to the Columbia; minimal infiltration onsite aside from runoff from the multi-use path***



Stormwater drain pipe



Map 6 - Air Quality





# Air Quality

2

## Why

Because the project site lies adjacent to many non-point air pollution sources (e.g, vehicles), it is important to understand existing air quality conditions. Assessing air quality is pertinent to this study because the feasibility of some land use alternatives could depend on air pollution levels.

## How

Given the project site's close proximity to I-205 and I-84, an air quality assessment was developed based on a general model for estimating vehicle emissions on Portland freeways. For this study, air quality estimates were based only on vehicle emissions because traffic volume data was readily available.

Based on 2004 and 2024 freeway traffic volumes, daily vehicle emissions levels were estimated for several common pollutants, including Volatile Organic Compounds, Carbon Monoxide, Nitrogen Oxide and Particulate Matter. Emissions levels were also developed for air toxics including Benzene, Butadiene, Formaldehyde, Acetaldehyde and Acrolein.

## Findings

Over the next two decades, air pollutants and toxic levels are expected to rise with projected traffic volume growth on I-205 and I-84. Efforts were made to compare the emissions estimates with federal and State air quality standards, however differences in the measurement methodologies complicated this task. The primary conclusion is that increased air pollutants and toxics could adversely impact air quality near and within the project site. The impact of deteriorating air quality on potential land use alternatives however is not entirely clear.

Please see Appendix A for model results and a more-detailed discussion of air quality.

## At A Glance

***Assessment based on vehicle emissions from surrounding freeways***

***Common air pollutants from vehicle emissions: Volatile Organic Compounds, Carbon Monoxide, Nitrogen Oxide, Particulate Matter***

***Air toxics also associated with vehicle emissions***

***Air pollutants and toxics expected to increase***

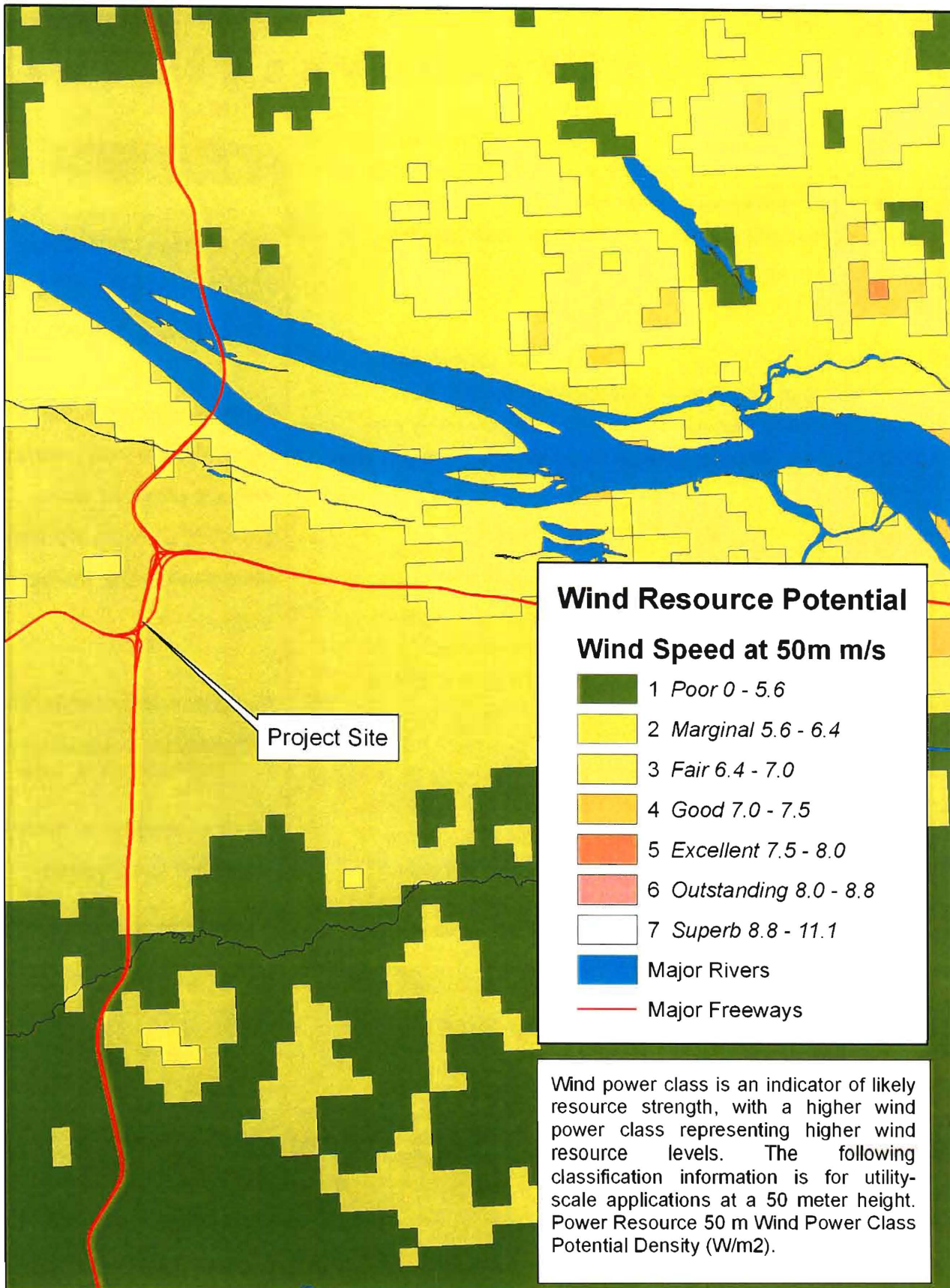


Interstate 205

Photo:



## Map 7 - Wind



0 4,200 8,400 16,800 25,200 33,600 Feet

# Wind Energy Potential

2

## Why

Portland isn't known for strong, steady winds; however, localized wind potential may enable the development of small scale wind operations for energy production. This section identifies wind resources onsite.

## How

A wind resource is seldom a steady, consistent flow and varies with the time of day, season, height above ground, and type of terrain. Therefore, at least one year of measurement is recommended to predict long term average wind speeds and variability. The cost of installing and operating an anemometer for one year ranges from \$12,000 to \$20,000. In light of this information, a formal wind study was not conducted because of the project's limited timeline and budget. Instead, regional wind data was mapped and analyzed for the site. Wind data was collected 50 meters above ground.

## Findings

As shown on the map (opposite page), the project site is located within a marginal area (Class 2) for wind production. In general, Class 3 winds are required for grid-connected projects while Class 1 winds may be adequate for non-connected electrical and mechanical applications such as battery charging and water pumping. Being in Class 2, the project site has the ability to power grid and non-grid-connected projects; however, a site specific wind study should be conducted to accurately determine available wind resources.

Intermittent winds also limit reliability as a power source especially in small scale wind projects. To avoid this problem, wind facilities should be placed on high poles, above any turbulence caused by urban infrastructure, trees, and geographic barriers such as Rocky Butte.

### At A Glance

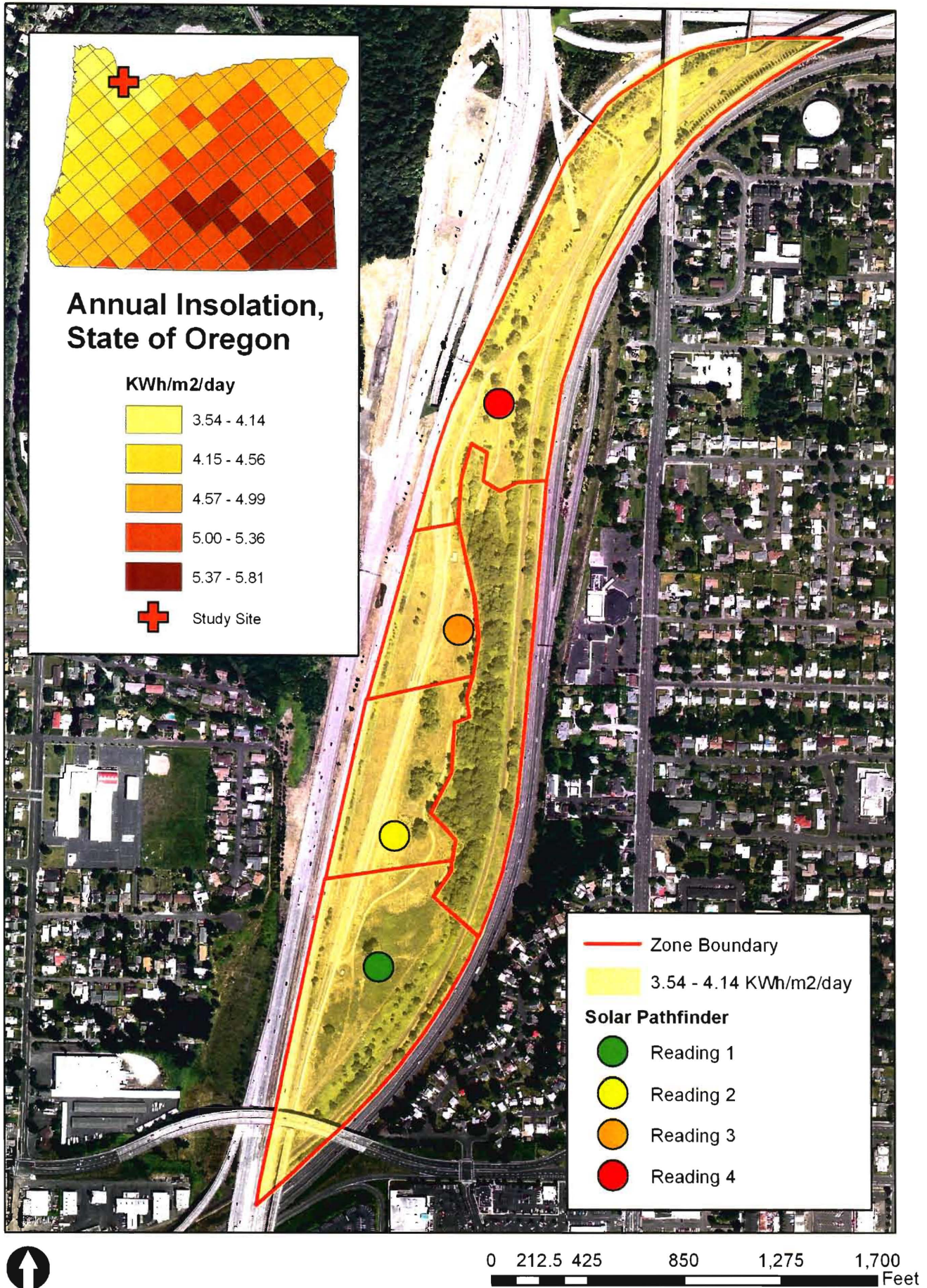
***Portland's light, unsteady winds are not enough to support a large-scale wind farm, although small-scale operations are possible***

***Wind speed within the project site's vicinity is marginal (Class 2), but there may be enough wind to power small grid and non-grid-connected projects***

***Wind turbines should be located on high poles to avoid urban infrastructure, forested areas, and geographical barriers such as Rocky Butte, which cause turbulence, slowing wind speeds***



## Map 8 - Solar





# Solar Energy Potential

2

## Why

Rising energy costs today are making renewable energy options more financially feasible. The open spaces on the project site may provide adequate solar exposure to produce power. With limited access to utilities on the site, onsite power production may prove to be an efficient way to provide power to the site.

## How

Site specific solar potential was collected using a Solar Pathfinder™, which is a device that shows the sun's average path and any obstacles (e.g. trees, buildings and/or terrain) that block its path throughout the year. Field teams chose to collect data in open locations on the project site with the greatest potential for solar gain (Map X). Please note, the energy solar potential analysis is preliminary and is intended to provide only a general indication of the site's suitability for further solar energy analysis. Further analysis is required before the best locations for power production can be chosen.

In general, Portland is not ideal for solar energy applications primarily due to a significant portion of calendar days of cloud cover. As such, it is difficult to collect sufficient quantities of solar radiation to justify the installation of a photovoltaic (PV) array. The inset map on Map X shows the average annual insolation levels (solar radiation hitting the Earth) for the State of Oregon. The insolation values represent the resource available to a flat plate collector, such as a photovoltaic panel, oriented due south at an angle from horizontal equal to the latitude of the collector location. This is typical practice for PV system installation, although other orientations are also used.

## Findings

Several large open areas on the project site could support a PV system of various sizes and configurations. As indicated on the annual insolation map for Oregon, the project site only receives between 3.54 – 4.14 KWh/m<sup>2</sup>/day in solar gain. This range is not ideal for large PV configurations; however, small configurations are feasible. Solar Pathfinder™ readings indicate that Zones 3 and 4 are most suitable for the placement of PV arrays.

### At A Glance

***Several locations on the project site are open and free of shading obstructions***

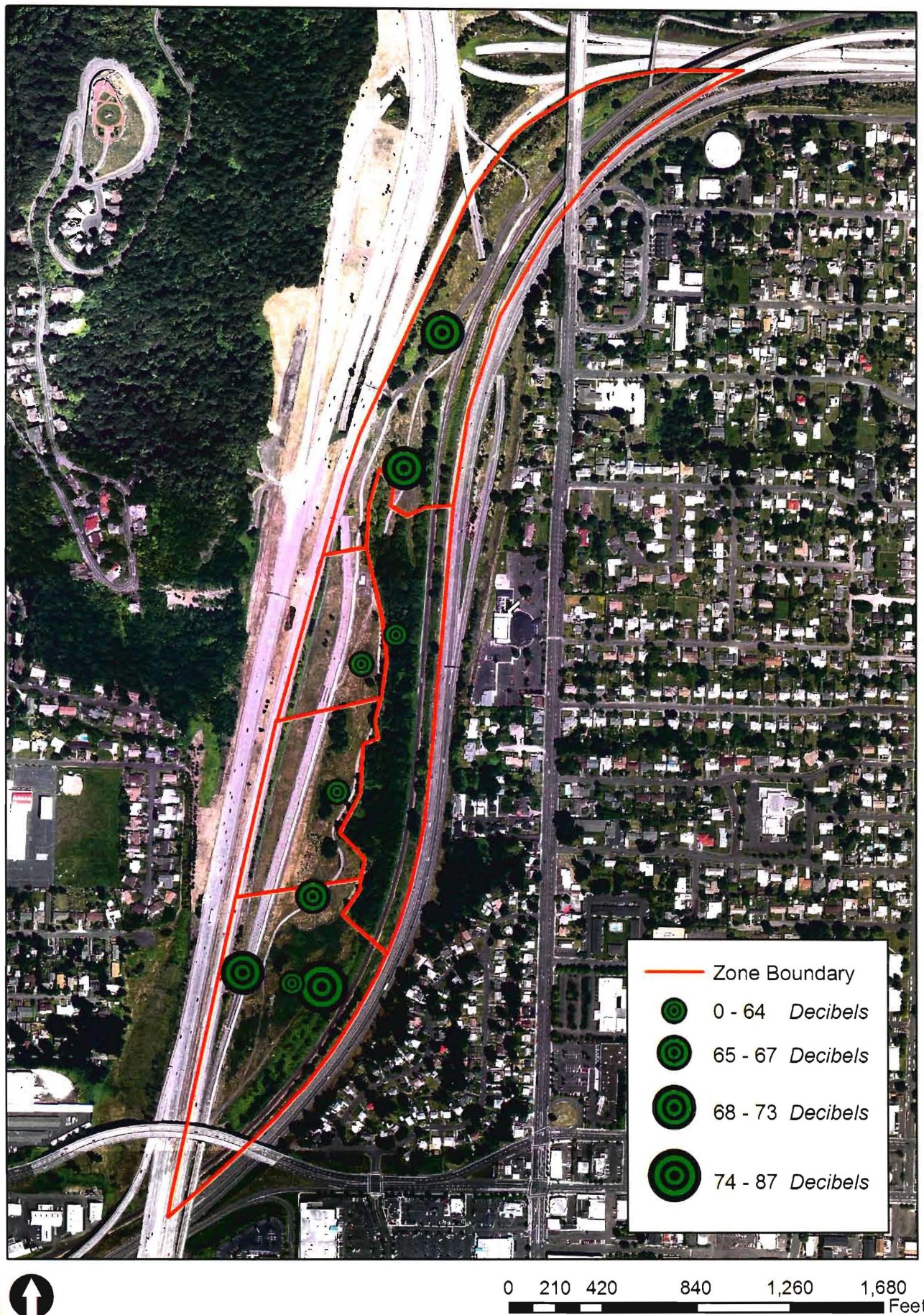
***Average annual insolation levels of 3.54 - 4.14 KWh/m<sup>2</sup>/day, are not ideal for solar electricity production, but the site could be used for demonstration purposes***



Sample Solar Pathfinder™ reading



## Map 9 - Noise





# Noise Levels

2

## Why

With interstate freeways, heavy rail tracks, and a light rail line surrounding the site, the common perception is that high noise levels will significantly limit the types of uses the project site can support. By taking decibel level readings at various points on the site we hope to determine the actual noise levels, and then compare them with acceptable noise standards established by various organizations [Appendix A].

## How

Using a handheld decibel meter, readings were taken within each of the project site's five zones. The readings were taken at locations known to be used by current and potentially future site users. The decibel readings are intended to provide a preliminary and general indication of noise on the site.

## Findings

Green and black icons located on the map (opposite page) show the location where each decibel reading was recorded - the larger the map icon, the louder the sound. Decibel readings ranged from a low of 64 to a high of 87. For reference, the table below provides decibel levels for common events.

### Noise: Points of Reference (decibels)

0	the softest sound a person can hear with normal hearing
10	normal breathing
20	whispering at 5 feet
30	soft whisper
50	rainfall
60	normal conversation
110	shouting in ear
120	thunder

Source: League for the Hard of Hearing

## At A Glance

***Decibel readings were taken at various locations on the project site***

***Zones 2 & 3 are located at a lower elevation than the freeway, and as a result, have the lowest noise levels***

***The loudest noise recorded was a freight train moving through the Zone 4: 87 decibels***



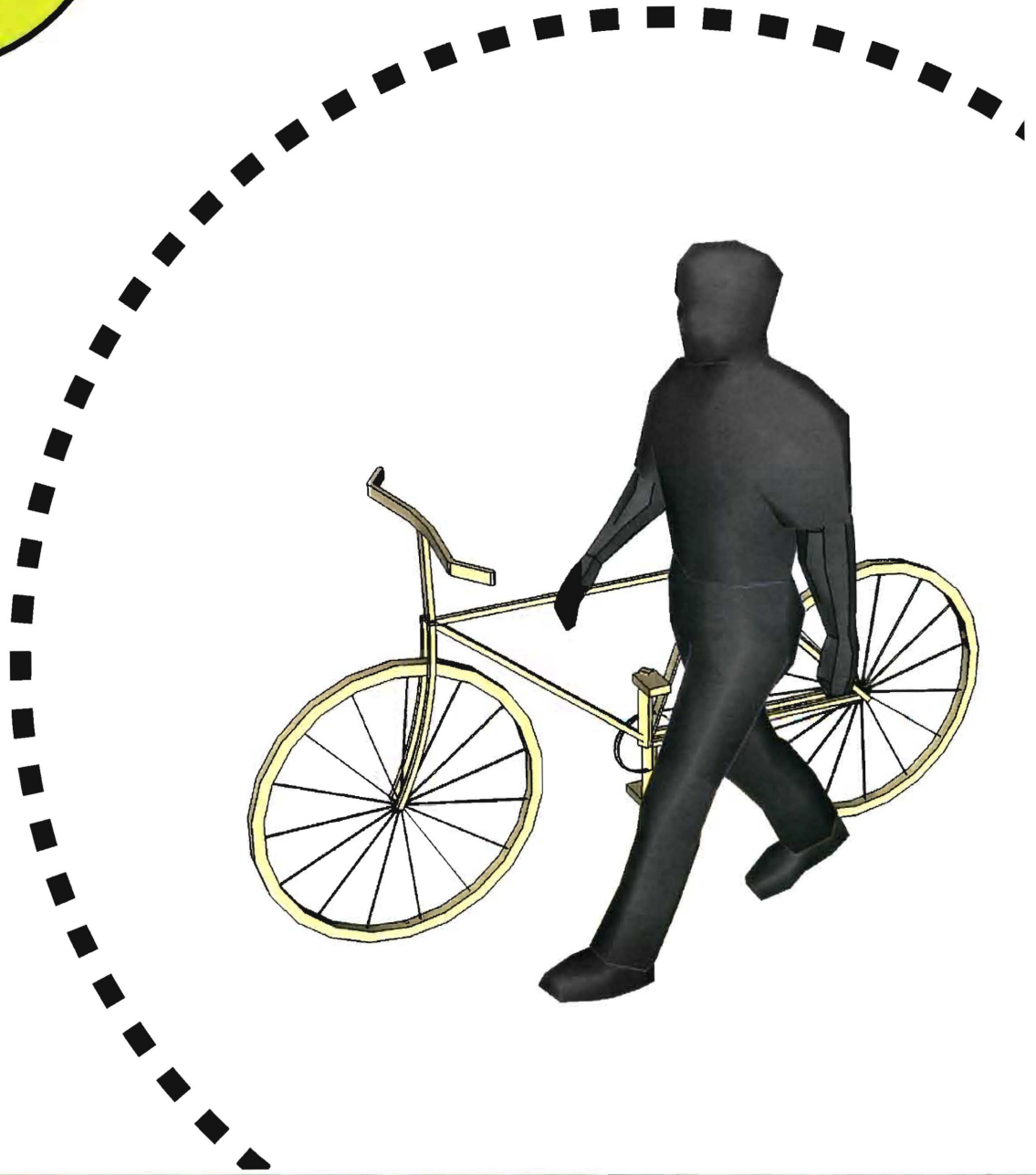








## Current Uses & Planning Issues









# Introduction

3

The following sections detail existing uses on the project site as well as surrounding transportation modes. The uses include existing utility infrastructure and ODOT uses as well as existing planning overlays. Access points are also identified. Human uses on the site were determined through numerous field visits. Some uses are informal and technically not condoned by ODOT since access to most portions of the site is currently prohibited. A description of how people move around and within the site (e.g., trails and maintenance roads) is also addressed as well as public safety issues and a summary of concurrent plans involving the project site and the surrounding Gateway URA.



Map 10 - Existing Uses



0 220 440 880 1,320 1,760 Feet





# Existing Uses

3

## Why

Looking at the current uses, ownership, and management of the project site will identify any established uses, determine the feasibility of alternative ownership and/or management scenarios, and will help identify issues and concerns with the current management of the site.

## How

The project team conducted interviews with officials from the ODOT and TriMet, and made several site visits to observe existing conditions.

## Findings

The project site is owned by ODOT and is managed and maintained by ODOT's District 2B office. ODOT classifies the site as "operating right-of-way", which means that it is earmarked for future mitigation or transportation needs and cannot be sold off as surplus land. As owner and manager, ODOT has the discretion to issue permits, define restrictions, and negotiate leases for potential uses on the project site. The type of permits and the terms of the leases would depend on the nature of the proposed use and negotiations between the parties. To date, ODOT has permitted two uses on the site that include the MAX light rail and a regional multi-use path on the west side of the project site. TriMet has a long-term lease to operate and maintain the MAX light rail line while ODOT takes responsibility for the I-205 multi-use path.

Due to the project site's proximity to residential neighborhoods and its easy accessibility by bike and foot, the site harbors several uses that have not been permitted by ODOT. Nearby residents use the site's open, grassy areas and hilly terrain for biking, walking dogs, and strolling, while evidence of numerous transient camps was observed in the secluded wooded area on the eastern boundary of the project site. These non-permitted uses are of particular concern to ODOT because with the exception of the maintenance and liability associated with TriMet's light rail line, ODOT is solely responsible for all maintenance and liability issues on the remainder of the site. As a result, they are willing to consider other uses that would either decrease or off-load responsibilities for maintenance and liability on the project site until it is needed for future transportation or mitigation needs.

## At A Glance

**Status: ODOT "operating right-of-way"**

**TriMet has a long-term lease for the MAX light rail located along the west edge of the site**

**ODOT maintains the multi-use path that parallels the MAX line**

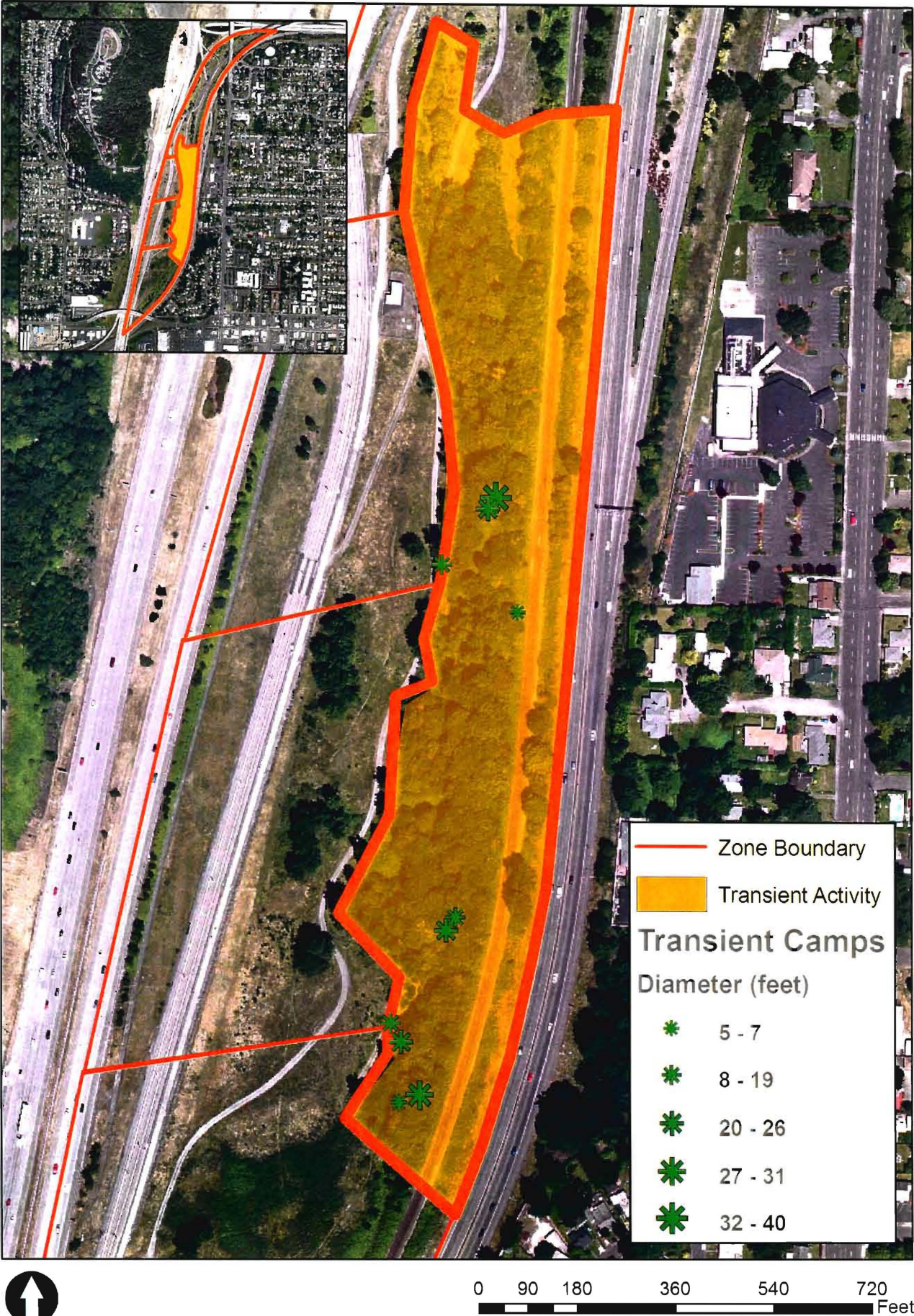
**Unofficial uses include mountain biking, dog-walking, and transient camp site**



Trail Users



Map 11- Transient Activity





# Transient Activity

3

## Why

At the crossroads of intersecting freight and light rail traffic, the project site is a hub of transient activity. The primary access point for transients is from an informal trailhead located at the northern end of the project site where the southern portion of Zone 1 and the northern wooded portion of Zone 5 meet. Transients also access the project site via the freight rail tracks on the site's eastern boundary with access to camp areas through a small informal foot path. An alternative route to access camps is from the southern end of Zone 5 where several informal trails exist.

## How

Transient activity was recorded through field observations. Firewood, bedding, shelter, garbage, debris, clothing, signs of fire, and clearing for tents were observed and photographed at each of the campsites. The physical location of all ten camps were recorded by tracking the pedestrian trail in Zone 5 and recording each campsite using Global Positioning System (GPS) coordinates (see map on opposite page). The diameter of campsite areas (in feet) were measured using a distance wheel to determine their size (see table on transient activity in Appendix A for more information).

## Findings

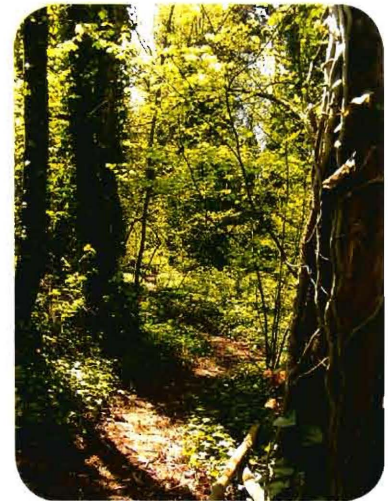
The informal trail through Zone 5 is well established and appears to be used both for walking and recreational mountain biking. It consists of 2,537 linear feet of winding singletrack trail paralleling the eastern edge of the Zone 5. Some short, steep descents from Zone 5 to Zones 2 and 3 appear to attract mountain biking enthusiasts, according to tracks identified off the main informal trail existing throughout the wooded area. The dense forest shields trail users from freeway noise. However, the freight rail line is loud and distracting through its mid-day service as it passes by the project site.

### At A Glance

***Ten transient camps identified with evidence of camping occurring on project site***

***Predominant transient activity localized in Zone 5 with one site in Zone 1***

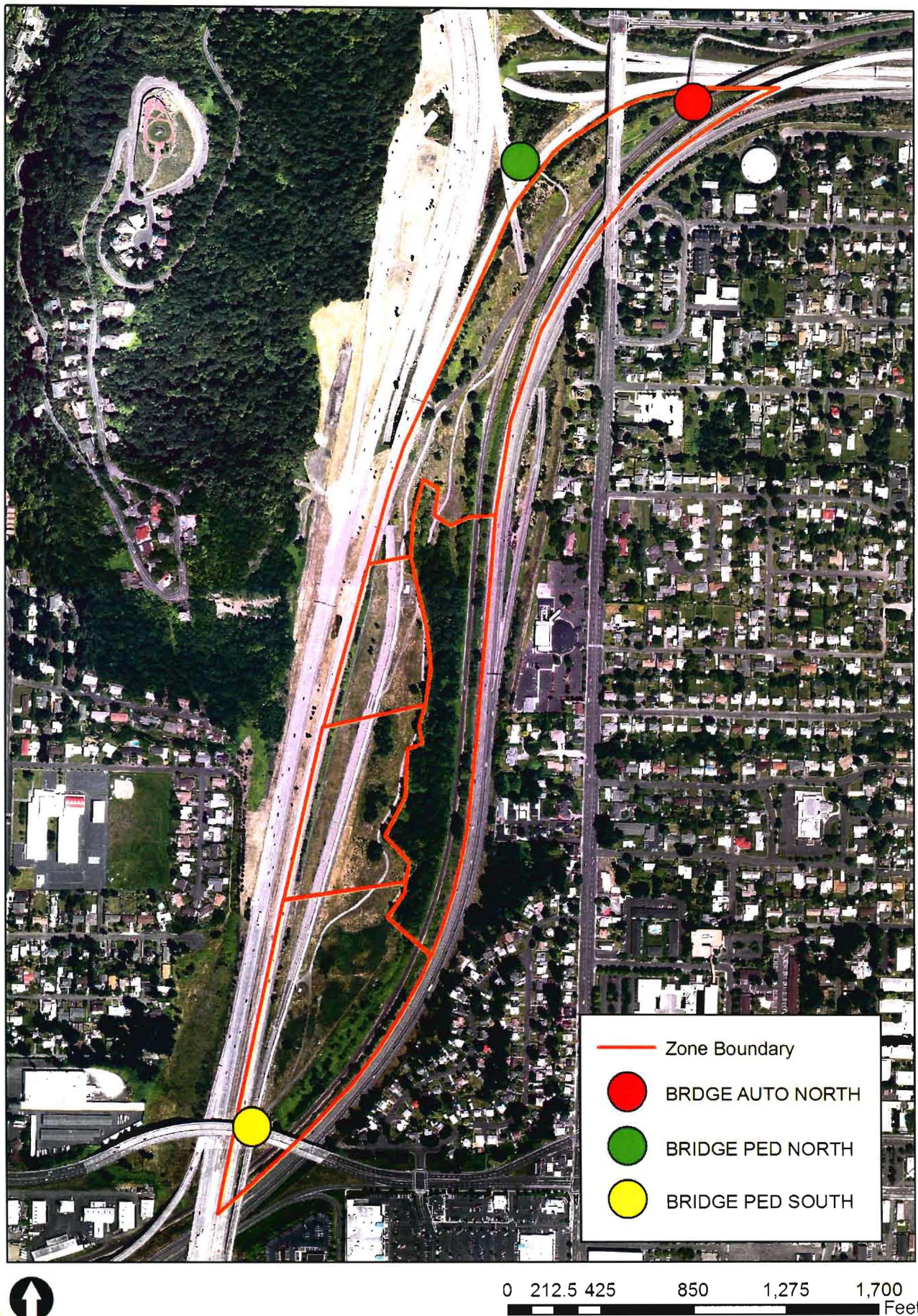
***Active recreation uses occurring near transient camps***



Informal Trail



## Map 12 - Site Access





# Site Access

3

## Why

Access plays a key role in determining the feasibility of potential land uses on the project site. In order to develop land use alternatives, it is first important to understand the site's current access characteristics.

## How

The project team conducted site visits to identify existing public and private access points. Team members also met with representatives from several agencies to discuss their concerns regarding access. The team also reviewed planning documents to identify planned transportation projects affecting access in and near the project site.

## Findings

Although several transportation modes pass through the project site, the area remains relatively access-constrained. The I-205 multi-use path provides the project site's only direct public access, though users are officially prohibited from leaving the path. TriMet's intergovernmental agreement with ODOT prohibits TriMet maintenance vehicles from accessing the project site via the I-205 path. Consequently, TriMet's motorized access is limited to a concrete pad serving "high-rail" vehicles in Zone 2 (though vehicles may use the gravel maintenance roads once they leave the tracks). Union Pacific Railroad maintenance vehicles access the project site via a narrow bridge in Zone 1 and on a narrow maintenance road in Zone 4.

Internal project site access is also limited. Fences completely surround the portion of Zone 1 between I-205 and the multi-use path, limiting access to ODOT vehicles. A fence also separates the path and the Union Pacific Railroad in Zone 1, though a relatively long gap exists for maintenance vehicle passage. In Zones 2, 3 and 4, fences separate the I-205 path from the adjacent light rail tracks. ODOT maintenance vehicles access this area through a gate at the southern end of Zone 3. On remaining project site lands, topography and vegetation are the most prominent features affecting internal access.

No formal plans exist to create new project site access points or to expand existing accesses. Any formal access improvements could be subject to Federal Highway Administration (FHWA) approval because FHWA partially funded ODOT's purchase of project site lands to build I-84 and I-205.

## At A Glance

***Only two public access points (via I-205 path)***

***ODOT maintenance vehicles use path***

***TriMet maintenance vehicles use light rail tracks***

***Maintenance vehicle access bridge for Union Pacific Railroad***

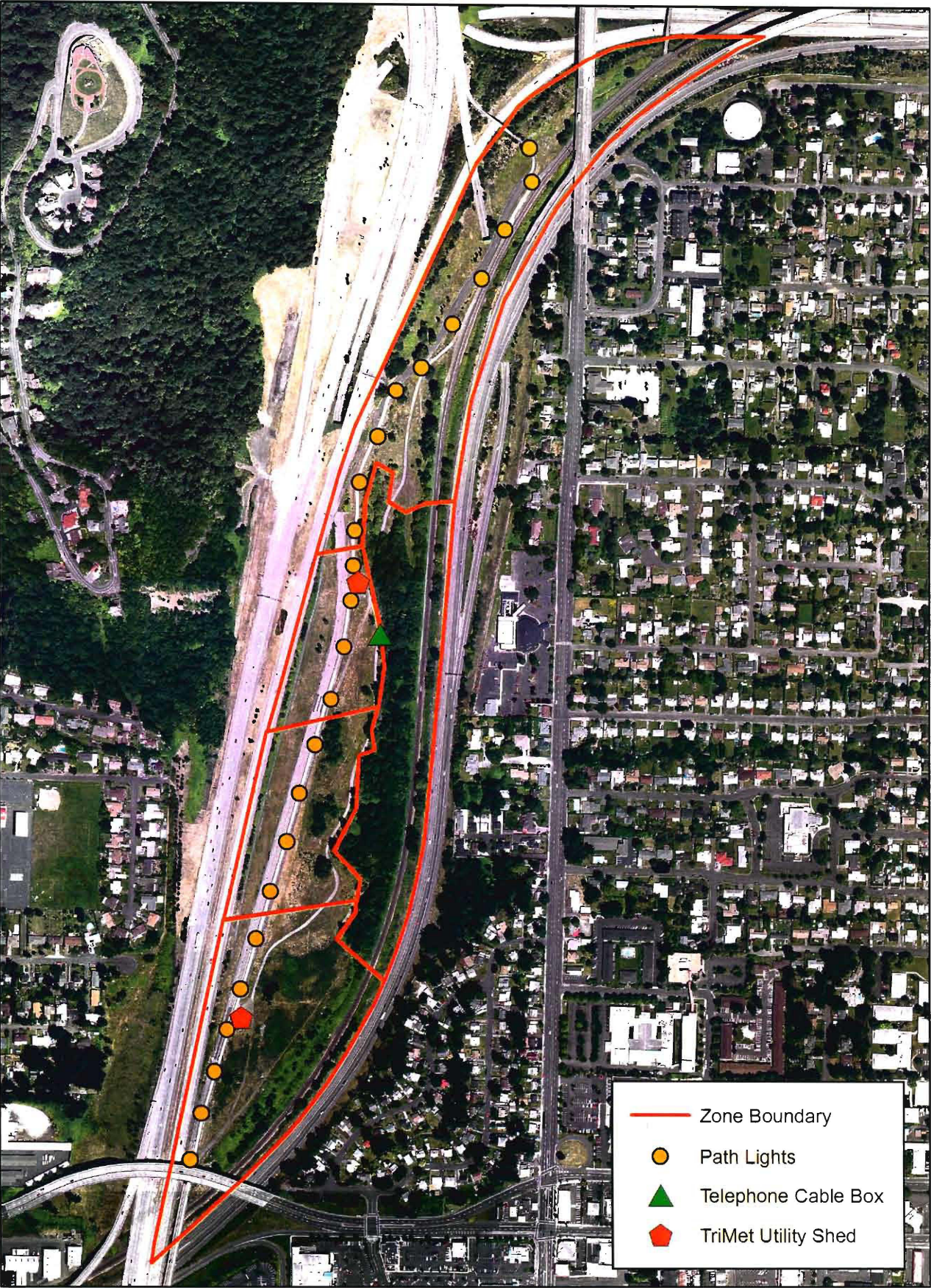
***Fences constrain internal site access***



South Access Point



Map 13 - Utilities





# Utilities

3

## Why

Most uses require the availability of at least some utilities in order to function. By identifying the type and location of existing utilities on the site, it will help in identifying the limitations on uses and will determine the most suitable areas for uses requiring connections to available utilities.

## How

Information regarding existing utilities on the project site was obtained from as-built drawings for the light rail line, multi-use path and I-205 that were provided by ODOT and TriMet (Appendix B). Utility information was also obtained from interviews with staff from both ODOT and TriMet as well as onsite verification.

## Findings

In general, available utilities on the site are mainly limited to those associated with the light rail and path along the site's western boundary. Existing utilities consist of electrical and storm sewer improvements that parallel the light rail line and multi-use path, however abandoned water, storm, and sanitary sewer lines from the demolished Rocky Butte Jail still exist in the central and northern areas of the site (Appendix B). Although the remnant water, storm, and sanitary sewer lines have been abandoned, it may be possible to restore some or all of these abandoned utility connections for future uses on the project site. A more in-depth study of the abandoned lines would be necessary to determine if restoration of these lines is feasible.

An underground electric line runs along the west side of the light rail tracks until it reaches the MAX tunnel where the line crosses over the tunnel and continues north through the project site. A duct bank that appears to belong to Pacific Power also parallels the light rail tracks and can be accessed from utility vaults that are located periodically along the line. A substation and signal house built and operated by TriMet is located near the MAX tunnel east of the tracks.

As illustrated on the map (opposite page), lighting on the site is limited to light poles that are located every 185 feet along the multi-use path between the path bridge over I-84 (south end of the project site) and areas along the path north of the project site. No other illumination exists on the site.

## At A Glance

***Electrical lines and storm sewers associated with the MAX light rail tracks run along the west side of the site, paralleling the light rail tracks***

***Abandoned water, storm, and sanitary sewer lines exist in the central area of the project site***

***The only lighting on the site is provided on poles along the regional bike path at 185-foot intervals***



TriMet Electrical Facility



## Map 14 - Zoning & Overlays



0 212.5 425 850 1,275 1,700 Feet





# Zoning & Overlays

3

## Why

The City's planning regulations provides a basis for determining what activities and uses may be feasible on the site and establishes what restrictions would be imposed on development.

## How

The project team researched the applicable sections of Title 33 (Zoning) of the City of Portland's Comprehensive Plan and consulted with the City's Bureau of Development Services at the Development Services counter.

## Findings

As illustrated in the map (opposite page), there are three base zone designations and two overlays affecting the project site. The base zones include Residential 7,000 (R7) over the southern half and most northerly tip of the site, Open Space (OS) over the northern half of the site, and General Industrial 2 (IG2) at the most southerly tip. An Environmental Conservation Overlay encompasses the wooded area on the eastern portion of the project site, and an Aircraft Landing Overlay covers most of the northerly half of the project site.

The base zone designations prescribe a variety of permitted and conditional uses that may be allowed on the site; however, given that the site is operational right-of-way owned by ODOT and because there are substantial automobile access limitations, the range of uses that would actually be feasible is limited. For instance, it is not feasible to expect that household or commercial uses would occur on the project site, but permitted or conditional uses such as agriculture, park, or open space could be appropriate given the access and ownership limitations.

It is anticipated that a Conditional Use Permit from the City of Portland would be required for any new use proposed on the project site, except a general park or open space use that does not require any improvements. A zoning map correction may also be requested for the R7 and IG2 zones designations, given the obvious unsuitability for residential or industrial development prescribed by these zoning overlays. Further inquiry into the City's procedure for map corrections would be necessary. A detailed description of each of the base zones and overlays affecting the project site, along with a summary of the regulations (height, setbacks, etc.) is provided in Appendix A.

## At A Glance

***Base zones affecting the site are R7, Open Space, and General Industrial 2, although a zoning update may be needed***

***There is an Environment Conservation Overlay on the eastern wooded area of the site and an Aircraft Landing Overlay over the northern portion of the site***

***A conditional use permit would most likely be required for any new uses proposed on the site***



## Map 15 - Transportation





# Transportation

3

## Why

Transportation is an important element to evaluate because it plays a key role in determining the feasibility of potential land use alternatives.

## How

To identify and assess existing transportation characteristics, the project team conducted site visits, met with agency representatives, and re-viewed relevant planning documents.

## Findings

I-205 and I-84 surround the project site on all sides. NE Halsey Street and NE 102nd Avenue cross over the site but do not provide direct access. Within the site, gravel roads serve ODOT maintenance vehicles. There are no short-term projects planned within the project site, however ODOT has identified a long-term need to widen I-205.

TriMet's MAX light rail follows the project site's western edge, with the nearest station located at Gateway Transit Center. Maintenance buildings are located in Zones 2 and 4, and "high-rail" maintenance vehicles access the site via the light rail tracks. TriMet may extend light rail to Vancouver, Washington via I-205 in the long-term, which could increase the number of trains passing through the project site. Current "as-built" drawings identify a potential "Rocky Butte" station in Zone 2 (contingent on surrounding land uses and ODOT approval). TriMet has also identified a portion of the site for a potential light rail maintenance facility.

The Union Pacific Railroad and a gravel maintenance road follow the project site's eastern edge. In Zone 1, the maintenance road crosses a narrow bridge toward an access gate at NE Fremont Street. About 10 to 12 trains pass through the project site daily, and volumes could grow by up to 50 percent in future years. There are currently no plans to expand rail capacity.

The I-205 multi-use path follows the project site's western edge. From the south, the path crosses a relatively narrow bridge paralleling I-205, and crosses over the I-84/I-205 interchange in Zone 1 before entering Maywood Park. Several informal trails also exist within the project site, including dirt bike trails in Zones 2, 3 and 4. Informal trails associated with transient activities exist in Zones 1 and 5.

See Appendix A for more-detailed transportation information.

## At A Glance

***I-205 and I-84: Nearly 200,000 daily vehicles near project site***

***MAX light rail: 8,200 daily passengers through project site***

***Union Pacific Railroad: At least 10 daily freight trains through project site***

***I-205 path: Connects project site with surrounding neighborhoods***



MAX Light Rail Red Line



# Relevant Plans

## At A Glance

*Expected growth at Gateway in housing and population*

*Additional park acreage needed to accommodate this demand*

*Need for coherent and attractive identity*

*Potential for new pedestrian, bicycle and transit connections*

In conducting the existing conditions report, the project team reviewed relevant planning documents that highlight future opportunities and on-going challenges within Gateway to examine potential uses at the project site:

### Gateway Regional Center URA Housing Strategy

- 2,000 new housing units by 2020.
- Increased multi-modal transportation options and amenities.
- 17 acres of parks needed to accommodate future housing growth.

### Opportunity Gateway Concept Plan and Redevelopment Strategy

- Demand for 20 more acres of parks and open spaces.
- Lack of street connectivity limits pedestrian and bicycle use.
- Two light rail stations act as catalysts for future redevelopment plans.
- Projected population growth of 122% by 2015.
- Prevailing need for a coherent and attractive identity.

### Park Acquisition and Development in the Gateway URA

- Links park acquisition with future economic development.
- Current park land located far from future growth and densities.
- Need to increase parklands from 8.08 to 23.4 acres in order to accommodate demand and growth within the URA .

### Gateway Transit Center Master Plan

- New parking structure accommodates 1,223 stalls.
- Projects 225,555 square feet of new public open space through several plazas.
- Additional pedestrian accommodations.

### Gateway Plan District

- Positioned for most intense development outside Central City.
- Encourages multi-modal travel through wider sidewalks, pedestrian paths, and bicycle routes.
- Provides open space bonuses of floor area for every square-foot provided for public use.





### **Hazelwood Neighborhood Plan**

- Increased new housing units across various incomes.
- Connected to development of open space and a diversity of housing and commercial uses at Gateway.

### **Outer Southeast Community Plan**

- More pedestrian connections.
- Creation of additional public open spaces to establish a more urban environment.

### **Regional Transportation Plan**

- Future transportation projects include light rail expansion, multi-use path crossing improvements, widening of I-84, and bike lane retrofitting.

### **Blueprint for Better Biking: 40 Ways to Get There**

- Bicyclists surveyed cite I-205 multi-use path crossings as a top priority.
- Expansion of low-speed, low-volume bikeways.

### **The Sullivan's Gulch Trail: An East-West Path in the Heart of the Region**

- Potential for a 4.3-mile pedestrian/bicycle path from the Central City to the I-205 multi-use path at the south end of the project site.



# Safety & Crime

## At A Glance

***Safety & liability issues are a major concern of ODOT***

***Unauthorized uses on the site increases the risks to ODOT***

***Limited access, isolation, and lack of lighting throughout the site contributes to a perceived lack of safety***

### Why

Liability issues on the project site are a major concern to ODOT. Currently, the multi-use path paralleling the light rail tracks is the only authorized public use on the site; however, the project team observed and documented several unauthorized uses on the remainder of the site, including various recreational activities and transient camps. These unauthorized activities expose ODOT to potential liabilities if injuries or crimes occur on the site, and ODOT is interested in limiting or eliminating these risks to the greatest extent possible.

### How

The project team made observations regarding safety issues during on-site visits and questioned people on the site about their perception of safety. Additionally, crime data for the grid and patrol district in which the project site is located (Grid 23093 of District 940) was obtained from the Portland Police Bureau for the years 2000-2005. The crime data were broken up into three categories: violent crimes, property crimes, and "other."

### Findings

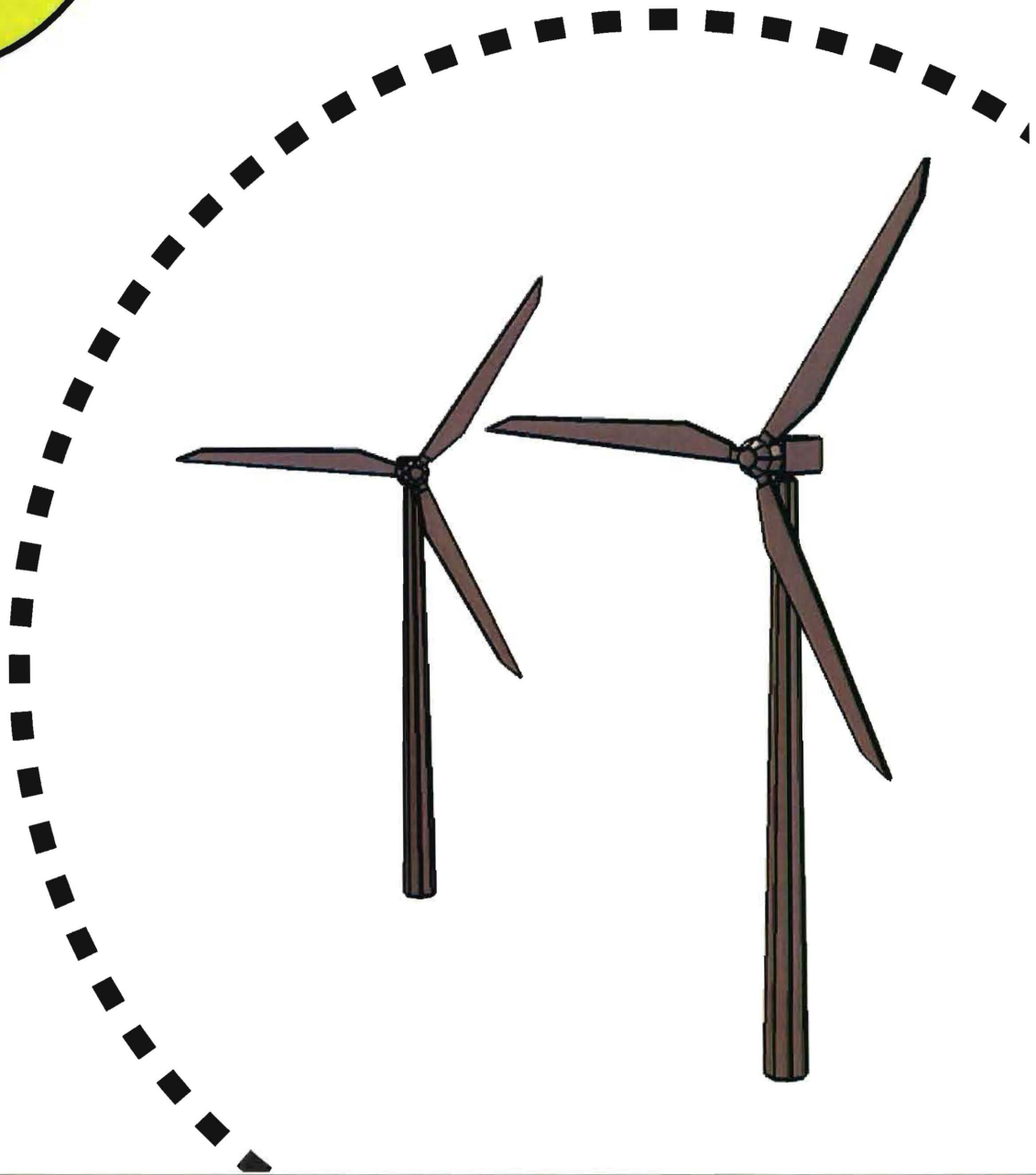
Factors that contribute to existing safety issues on the site include limited access, isolation, and lack of lighting. There are only two access points on the northern and southern ends of the site that are wide enough to accommodate pedestrians, bicycles, or small motorized vehicles. Thus, response time for police or emergency vehicles is substantially delayed, and there is a sense of isolation that can encourage criminal activities or unauthorized uses such as transient camps. When speaking to various users encountered on the site, they attested to feeling safe in the open, grassy areas, but admitted to avoiding the wooded area on the site due to the presence of transient camps and observations of illegal activities. Lack of lighting on the site, which is limited only to light poles along the multi-use path, also likely contributes to a feeling of isolation and lack of safety.

The tables in Appendix A list a selection of documented crimes that have occurred in the grid and patrol district that the project site is located in. Although the data does not document crimes that have specifically occurred on the site, the data gives a general idea of the number of crimes that have occurred in and around the site in the past five years. [The project site does not have an address, is large, and is not easily described, so crime occurrences specific to the site are not available].



4

## Potential Site Elements









# Introduction

The site's physical characteristics provide a framework or baseline of existing conditions. These characteristics become resources as future uses for the site are explored. This is the focus of the following section. This section takes the assessment of physical characteristics and overlays potential uses the site might support in the future. These elements were derived from previous stakeholder interests, observations of existing uses, as well as the notion that as a species and stewards of planet Earth, people have an obligation to develop lands in a way that protects, restores, and operates on a sustainable path, both socially and ecologically.

All told, the following sections describe potential site elements. For each element, detail is provided regarding associated facilities, space requirements, access requirements, estimated costs, neighborhood benefits, and compatibility with other potential elements. Associated maps convey potential locations of site elements. In addition, a matrix is provided to summarize key points for each element.

# Potential Elements Matrix

## Summary of Potential Site Uses

Uses	Associated Facilities	Space Req's	Suitable Locations
<b>Bicycle/Ped Bridge</b>	<ul style="list-style-type: none"> <li>Stairs and ADA-compliant ramps</li> <li>Fencing on sections passing over freeways</li> </ul>	<ul style="list-style-type: none"> <li>Typically 15 feet wide</li> <li>Subject to Federal vertical clearance standards</li> </ul>	<ul style="list-style-type: none"> <li>Crossings over I-205 and I-84 to connect with Rocky Butte, Montavilla, Parkrose</li> </ul>
<b>Debris Reclamation</b>	<ul style="list-style-type: none"> <li>Additional water system facilities and infrastructure required for concrete reuse</li> </ul>	<ul style="list-style-type: none"> <li>Minimum set aside of two acres for excavation and reclamation</li> </ul>	<ul style="list-style-type: none"> <li>Zone 4 adjacent to or near the buried highway construction materials</li> </ul>
<b>Freeriding Bicycle Facility</b>	<ul style="list-style-type: none"> <li>Challenge elements including jumps, ramps, wooden tracks and other bicycle skills area need to be constructed by freeriding enthusiasts in stages utilizing both fallen logs, mounds and purchased wood</li> </ul>	<ul style="list-style-type: none"> <li>Varies. This facility would be limited in size to a trail loop of less than one mile due to site constraints</li> </ul>	<ul style="list-style-type: none"> <li>Zone 5 along the informal trail with small sections in Zones 2 and 3 where elevated mounds exist</li> </ul>
<b>Greenhouses</b>	<ul style="list-style-type: none"> <li>Water, storm sewer, and electrical services</li> <li>Greenhouse structures and storage building</li> </ul>	<ul style="list-style-type: none"> <li>Double area of proposed greenhouse and add 13% for storage building</li> </ul>	<ul style="list-style-type: none"> <li>Zones 1, 2, and southern portion of 3</li> </ul>
<b>Light Rail Maintenance Facility</b>	<ul style="list-style-type: none"> <li>"Loop tracks" connecting with main trackway</li> <li>Covered structure</li> <li>New vehicle access road and bridge</li> </ul>	<ul style="list-style-type: none"> <li>About 16 acres</li> </ul>	<ul style="list-style-type: none"> <li>Southern portion of project site</li> </ul>



Access Req's	O & M	Estimated Cost	Neighborhood Benefits
<ul style="list-style-type: none"> <li>Existing public access points</li> <li>Maintenance/ emergency access via off-site bridge access points</li> <li>Requires added bridge(s) to accommodate load capacity and access for heavy equipment used in reclamation</li> </ul>	<ul style="list-style-type: none"> <li>ODOT responsibility or ODOT partnership with Oregon Parks &amp; Rec. Dept. and/or City of Portland</li> <li>Could be operated and maintained by ODOT as owner and state transportation agency as a cost-saving alternative to conventional highway construction</li> </ul>	<ul style="list-style-type: none"> <li>\$1 million minimum</li> <li>Actual cost savings of 3.8% by reducing transportation, material acquisition and disposal costs when recycling concrete rather than importing aggregate</li> </ul>	<ul style="list-style-type: none"> <li>Would provide direct site access to more potential users</li> <li>Environmental benefits through removal and proper reuse of construction materials.</li> <li>Reduced costs to public taxpayers (through bonds issued) for construction materials used in highway and arterial expansion.</li> </ul>
<ul style="list-style-type: none"> <li>Requires access at the northern end of Zone 1 at the railroad bridge and at the southern end of Zone 4 at the I-205 multi-modal path</li> </ul>	<ul style="list-style-type: none"> <li>Must be operated and maintained by freeride association and its members who maintain responsibility and liability for construction and use of the site for freeriding purposes</li> </ul>	<ul style="list-style-type: none"> <li>Minimal operating costs with appx. \$500 to \$3,000 in capital costs for construction</li> <li>Member fees should pay for construction and operating expenses</li> </ul>	<ul style="list-style-type: none"> <li>Recreational benefit to mountain bike enthusiasts of all ages.</li> <li>Meets increasing demand from enthusiasts for access to new facilities within the Portland metropolitan area</li> </ul>
<ul style="list-style-type: none"> <li>Access by vehicles and small excavator during construction</li> <li>Regular access via existing public access points possible</li> </ul>	<ul style="list-style-type: none"> <li>Institutional or other public horticultural center</li> </ul>	<ul style="list-style-type: none"> <li>\$11.00-\$17.00 per sq. ft + cost of labor, utilities, accessories</li> </ul>	<ul style="list-style-type: none"> <li>Provide jobs</li> <li>Educational benefits</li> </ul>
<ul style="list-style-type: none"> <li>Trains: "Loop tracks"</li> <li>Vehicles: New access bridge at NE 99th Ave.</li> </ul>	<ul style="list-style-type: none"> <li>TriMet</li> </ul>	<ul style="list-style-type: none"> <li>\$100 million minimum</li> </ul>	<ul style="list-style-type: none"> <li>Would potentially displace existing informal recreation activities</li> <li>Potential regional benefits</li> </ul>

## Potential Elements Matrix Cont'd

Uses	Associated Facilities	Space Req's	Suitable Locations
<b>Agriculture</b>	<ul style="list-style-type: none"> <li>• Connect to abandoned utilities</li> <li>• Improved access for farm equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Approx. 50% of site.</li> </ul>	<ul style="list-style-type: none"> <li>• Flatter areas of Zones 2, 3, and 4</li> </ul>
<b>Off-leash Dog Area</b>	<ul style="list-style-type: none"> <li>• Fencing</li> <li>• Water hook-up</li> <li>• Waste receptacles</li> <li>• Signs</li> </ul>	<ul style="list-style-type: none"> <li>• 30,000 + sq. ft.</li> </ul>	<ul style="list-style-type: none"> <li>• Zone 1 &amp; 2</li> </ul>
<b>Public Park</b>	<ul style="list-style-type: none"> <li>• Water and sewer hook-up</li> <li>• Restroom</li> <li>• Garbage cans, benches, picnic tables</li> <li>• Signs</li> </ul>	<ul style="list-style-type: none"> <li>• Varies</li> </ul>	<ul style="list-style-type: none"> <li>• All zones</li> </ul>
<b>Walking/Jogging Trails</b>	<ul style="list-style-type: none"> <li>• Soft surface</li> <li>• Drainage treatments</li> <li>• Distance markers, interpretive signs</li> </ul>	<ul style="list-style-type: none"> <li>• 8 foot width</li> <li>• Horizontal and vertical clearances as necessary</li> </ul>	<ul style="list-style-type: none"> <li>• All zones within project site</li> <li>• Avoid railroad crossings</li> </ul>



Access Req's	O & M	Estimated Cost	Neighborhood Benefits
<ul style="list-style-type: none"> <li>For larger vehicles</li> </ul>	<ul style="list-style-type: none"> <li>ODOT</li> <li>Contract with private nursery</li> <li>Portland Parks and Recreation Horticulture Division</li> <li>OSU &amp; PSU</li> <li>Hacienda CDC Verde Native Plant Nursery</li> </ul>	<ul style="list-style-type: none"> <li>Greatest costs incurred with soil remediation and access improvements</li> </ul>	<ul style="list-style-type: none"> <li>Gardening programs</li> <li>Space requirements may compromise other beneficial uses</li> </ul>
<ul style="list-style-type: none"> <li>Access for Emergency vehicles</li> <li>Existing public access points</li> </ul>	<ul style="list-style-type: none"> <li>Pet advocacy group in conjunction with Portland Parks &amp; Rec.</li> </ul>	<ul style="list-style-type: none"> <li>\$5,000-\$30,000</li> </ul>	<ul style="list-style-type: none"> <li>Ideal location for off leash area due to isolation from residential neighborhoods</li> <li>Meets a recreation need in Gateway</li> </ul>
<ul style="list-style-type: none"> <li>Access for Emergency vehicles</li> <li>Additional pedestrian access points and/or public vehicle access desirable, but not required</li> </ul>	<ul style="list-style-type: none"> <li>A "friends of" or other non-profit parks advocate group with support from Portland Parks &amp; Rec</li> </ul>	<ul style="list-style-type: none"> <li>Varies widely depending on amenities</li> </ul>	<ul style="list-style-type: none"> <li>Very beneficial to neighborhood due to severe open space and park deficiency in Gateway</li> </ul>
<ul style="list-style-type: none"> <li>Existing public access points</li> <li>Additional maintenance/emergency access may be necessary</li> </ul>	<ul style="list-style-type: none"> <li>ODOT responsibility or ODOT sublease to government or non-government entity</li> </ul>	<ul style="list-style-type: none"> <li>Up to \$250,000 per mile</li> </ul>	<ul style="list-style-type: none"> <li>Would help meet Gateway's recreational needs</li> </ul>

# Potential Elements Matrix Cont'd

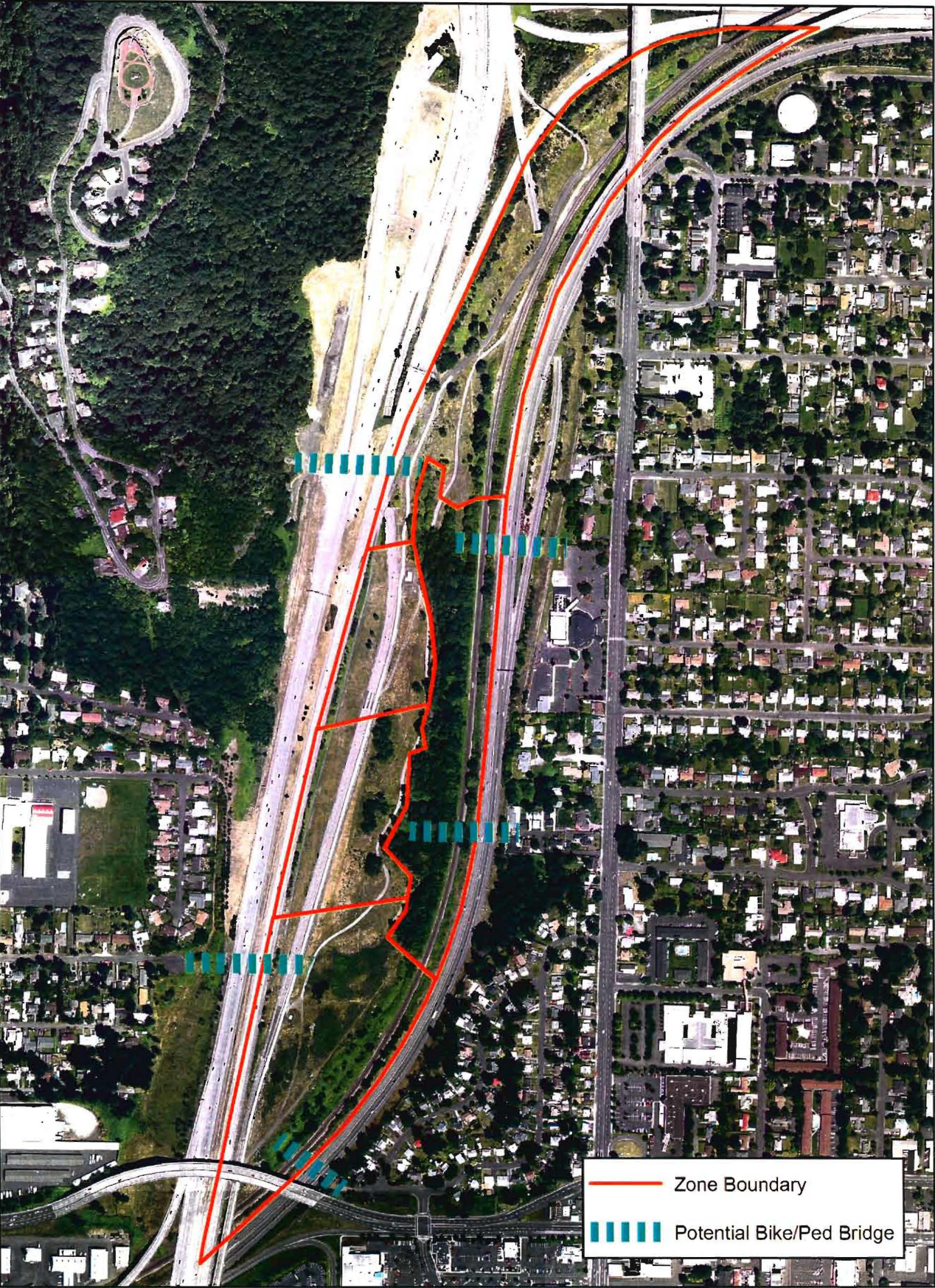
Uses	Associated Facilities	Space Req's	Suitable Locations
<b>Solar PV Array</b>	<ul style="list-style-type: none"> <li>• Solar panels</li> <li>• Enclosure for inverters</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• 123 sq. Ft. per unit</li> </ul>	<ul style="list-style-type: none"> <li>• Zones 1-3</li> </ul>
<b>Wind Turbine (Large)</b>	<ul style="list-style-type: none"> <li>• Electrical infrastructure (which may include small utility buildings)</li> </ul>	<ul style="list-style-type: none"> <li>• 12-ft. diameter footprint, with enough air space for turbine</li> </ul>	<ul style="list-style-type: none"> <li>• Zones 1, 4, and 5</li> </ul>
<b>Wind Turbine (Small)</b>	<ul style="list-style-type: none"> <li>• Micro Turbines</li> <li>• Solar panels (optional for hybrid use)</li> <li>• Poles for mounting</li> <li>• Battery or connection to grid</li> <li>• Fencing, if guyed poles are used</li> </ul>	<ul style="list-style-type: none"> <li>• Varies – no additional space required if mounted on existing light poles</li> </ul>	<ul style="list-style-type: none"> <li>• Zone 1, west of light rail tracks in Zone 3, and Zone 4</li> </ul>
<b>Solar Composting Restroom</b>	<ul style="list-style-type: none"> <li>• none</li> </ul>	<ul style="list-style-type: none"> <li>• 4' x 8' min or larger as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Along bike or ped path in any Zone, except Zone 5</li> </ul>
<b>Stormwater Management</b>	<ul style="list-style-type: none"> <li>• Underground piping</li> <li>• Outflow facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on volume diverted</li> </ul>	<ul style="list-style-type: none"> <li>• All zones, particularly Zones 1-3</li> </ul>
<b>Wildlife Habitat</b>	<ul style="list-style-type: none"> <li>• Nest boxes</li> <li>• Temporary irrigation source</li> </ul>	<ul style="list-style-type: none"> <li>• Buffer around wetland pockets</li> </ul>	<ul style="list-style-type: none"> <li>• Zone 5</li> <li>• Tree clusters in Zones 1-4</li> </ul>



Access Req's	O & M	Estimated Cost	Neighborhood Benefits
<ul style="list-style-type: none"> <li>Access by a light duty vehicle</li> </ul>	<ul style="list-style-type: none"> <li>ODOT responsibility or public-private partnership</li> <li>TriMet project</li> </ul>	<ul style="list-style-type: none"> <li>\$14,196 retail – funding may be available from the Energy Trust or state tax credits</li> </ul>	<ul style="list-style-type: none"> <li>Identify project</li> <li>Demonstration of renewable energy/ public education</li> </ul>
<ul style="list-style-type: none"> <li>Access by heavy duty and light duty vehicles for installation and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Sponsorship by a local wind turbine manufacturer (Vestas)</li> </ul>	<ul style="list-style-type: none"> <li>\$500,000-\$1 million</li> </ul>	<ul style="list-style-type: none"> <li>Identify project</li> <li>Demonstration of renewable energy/ public education</li> </ul>
<ul style="list-style-type: none"> <li>Access by standard truck or bucket truck for installation and biannual inspections</li> </ul>	<ul style="list-style-type: none"> <li>ODOT, if mounted on existing light poles</li> <li>TriMet if art project</li> </ul>	<ul style="list-style-type: none"> <li>Turbines run \$2,00-\$2,500 each without labor, pole, or accessories</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in energy costs for lighting the site</li> <li>Demonstration project on renewable energy source</li> </ul>
<ul style="list-style-type: none"> <li>Access by light duty vehicle during construction, otherwise existing access is sufficient</li> </ul>	<ul style="list-style-type: none"> <li>Owned and operated by the organization with lease on the site</li> </ul>	<ul style="list-style-type: none"> <li>\$1,500-\$10,000</li> </ul>	<ul style="list-style-type: none"> <li>Direct benefit to all users of the site</li> </ul>
<ul style="list-style-type: none"> <li>Pipe installation</li> <li>Large vehicles and machinery</li> </ul>	<ul style="list-style-type: none"> <li>ODOT</li> <li>Coord. with Bureau of Environmental Services, Columbia Slough WC and/or Greenspaces Institute</li> <li>Water Bureau</li> </ul>	<ul style="list-style-type: none"> <li>Depends on volume diverted and engineering requirements</li> </ul>	<ul style="list-style-type: none"> <li>Cleaner rivers</li> <li>Wetland features</li> <li>Water education</li> </ul>
<ul style="list-style-type: none"> <li>Multi-use path</li> <li>Northern access for light trucks</li> </ul>	<ul style="list-style-type: none"> <li>ODOT</li> <li>Portland Parks and Recreation</li> <li>Columbia Slough WC</li> <li>Neighborhood Schools</li> <li>Audubon/Greenspaces Institute</li> </ul>	<ul style="list-style-type: none"> <li>May be offset with grant funding</li> </ul>	<ul style="list-style-type: none"> <li>Wildlife viewing</li> <li>Increased connection with nature</li> </ul>



Map 18 - Bicycle/Pedestrian Bridges



- Zone Boundary
- Potential Bike/Ped Bridge

0 212.5 425 850 1,275 1,700 Feet



# Bicycle/Pedestrian Bridges

4

## Description

While multi-use paths currently link the project site with Maywood Park to the north and Gateway Transit Center to the south, the area lacks east-west connections. New bicycle/pedestrian bridges could connect the project site with Rocky Butte State Park and the Montavilla neighborhood to the west, as well as with the Parkrose neighborhood to the east.

## Associated Facilities

Bicycle/pedestrian bridges require several elements beyond the span itself. At each end, the bridge would need to include stairs and ADA-compliant ramps. In addition to railings along the bridge and ramps, fencing would be required on segments spanning the freeways. The bridge may also require a varying number of support piers.

## Space Requirements

Typical bicycle/pedestrian bridge decks span about 15 feet wide, with additional horizontal clearance for fencing and railings. A bridge would also need to meet federal vertical clearance standards when spanning the freeways, the light rail tracks and the Union Pacific Railroad. At each bridge end, additional land would be necessary for stairs and ramps.

## Suitable Locations

A direct connection with Rocky Butte State Park could be achieved with a bridge in Zones 1 or 2. To establish a direct link Montavilla, a bridge could cross I-205 and the light rail tracks in Zone 4 and connect with a cul-de-sac on NE Hancock Drive. Connections with Parkrose could be achieved with a bicycle/pedestrian bridge spanning I-84 and the Union Pacific Railroad. Ideally, the bridge would connect with a path leading to NE 102nd Avenue, though fully-developed lands constrain trail opportunities in this area.

## Access Requirements

Because the bicycle/pedestrian bridges would exclusively serve non-motorized traffic, the two existing project site access points could accommodate this use. Maintenance and emergency vehicles could access the new bridges at the corresponding bridge ends in adjacent neighborhoods, with the possible exception of the Rocky Butte State Park bridge.

## At A Glance

**Potential connections with Montavilla, Parkrose, Rocky Butte**

**Minimum cost: \$1 million per bridge**



Bike/Ped Bridge

## Bicycle/Pedestrian Bridges Cont'd

### Ownership, Operations, Maintenance, Liability

Because the bridges would predominantly lie within ODOT right-of-way, ODOT would likely assume ownership, operations, maintenance and liability responsibilities. Alternatively, the agency could partner with the City of Portland for any bridges connecting with City neighborhoods and streets. ODOT could also partner with the Oregon Parks and Recreation Department for a bridge connecting the site with Rocky Butte State Park.

### Estimated Cost

A bicycle/pedestrian bridge could cost \$1 million to \$1.5 million, assuming the bridge is prefabricated and includes a “basic” design. A “signature bridge,” usually integrating various aesthetic features, could raise the cost to \$3 million or more. It should be noted that these rough estimates do not include costs associated with ramps and stairs at the bridge ends, nor do they include the costs of land acquisition (which could be necessary for a bridge accessing the Parkrose neighborhood).



Bridge deck with fencing

### Neighborhood Benefits

New non-motorized connections could generate positive neighborhood and regional impacts by providing direct site access to a larger number of users. The new bridges would also provide additional connections to the I-205 multi-use path, potentially increasing the attractiveness of bicycling and walking in and around the project site.

### Compatibility with Other Potential Uses

Bicycle/pedestrian bridges would not require substantial space within the project site, therefore minimally impacting the feasibility of other potential land uses. The bridges could complement other uses including parks and walking/jogging trails. On the other hand, the additional public access may not be desirable if other proposed land uses are oriented toward private use.







Map 19 - Debris Reclamation





# Debris Reclamation

4

## Description

One of the land use elements to be considered in evaluating potential uses for the project site is debris reclamation. According to ODOT, large sections of the old Banfield Freeway were buried within Zone 4 in the 1980s. The burial resulted in an elevated mound on the southern portion of the project site comprised of concrete, asphalt, rebar, and other construction materials. The waste could be reclaimed and reused in transportation infrastructure projects such as lane expansion at I-205 (thus providing economic, engineering and environmental benefits given the 60-year life cycle of concrete pavement).

Recycled Concrete Material (RCM), also known as crushed concrete, is a reclaimed Portland Cement Concrete (PCC) pavement material. The primary sources of RCM include the demolition of existing concrete pavement from bridge structures, curb and gutter, and freeway facilities. This construction material is crushed mechanically into manageable fragments and stockpiled. The physical characteristics of crushed concrete make it a viable substitute for aggregate and can be used as a granular base and material fill such as riprap, thus reducing waste generated as a by-product. Ultimately, RCM obtained on-site may be employed immediately for project use or stockpiled for future use. This on-site reuse may pose as a cost-saving alternative to conventional freeway construction for ODOT, especially for transportation projects along I-205 and I-84. In addition to RCM, other examples of transportation debris reclamation include reclaimed asphalt pavement (RAP), reclaimed concrete aggregates (RCA) from deconstructed PCC pavements, virgin petroleum-contaminated soils, and removal of fallen logs.

## Associated Facilities

Concrete made using RCA requires more water and ample entrained air for its potential use. It is necessary to wet the concrete material to prevent airborne dust particles and compact the material with steel wheel rollers. The site would need additional water facilities beyond the current infrastructure to meet the demand.

## Space Requirements

The space necessary for a debris reclamation facility on site would require a minimum of two acres adjacent to the buried freeway mound in Zone 4 for transportation, excavation, reclamation and construction purposes.

## At A Glance

***Buried freeway construction materials from the 1980s located in Zone 4***

***Potential reclamation and reuse in future transportation projects***

***Expected cost savings to ODOT in reduced transportation and material acquisition***

***Synergistic with other access-deficient and resource-heavy land use elements***

## Debris Reclamation Cont'd

### Suitable Locations

Since freeway debris is buried in Zone 4, reclamation equipment and associated activities would be located there.



Debris reclamation

### Access Requirements

A potential debris reclamation facility would require access for heavy equipment such as bulldozers, mixers and dump trucks to excavate, reclaim, transport and reuse these construction materials. One alternative plan would be to expand access for heavy equipment at the same access bridge proposed for a light rail maintenance facility (discussed later) due to similar load capacity requirements.

### Ownership, Operations, Maintenance, Liability

Operations and management of debris reclamation activities on the project site could be administered by ODOT. Transportation agencies from across the nation typically head these types of projects.

### Estimated Cost

Debris reclamation would minimize cost from transporting new aggregate and truck traffic to the site. There would also be additional savings in material acquisition and disposal if the material is used for transportation projects within the surrounding area. A recent value-engineering proposal in Michigan estimated that the reuse of construction materials resulted in cost savings of over \$114,000 on a \$3 million transportation project.

### Neighborhood Benefits

Debris reclamation on the south end of the project site would provide environmental benefits through removal and proper reuse of construction materials, thus benefiting groundwater sources and improving soils. It would also reduce costs to public taxpayers (through bonds issued) for construction materials used in freeway and arterial expansion.

### Compatibility with Other Potential Uses

During reclamation activities, this element may not be compatible with other uses due to the level of noise and intensity of use that this element may typically cause. However, agricultural development, greenhouses or a light-rail maintenance facility may be compatible with reclamation activities given their similar needs for heavy truck and equipment access



and may be able to utilize reclaimed construction materials during development (e.g., crushed rock).



Map 20 - Freeriding Bicycle Facility



0 235 470 940 1,410 1,880 Feet





# Freeriding Bicycle Facility

4

## Description

Freeriding is an advanced style of mountain biking that focuses on the rider's ability to hone in on technical riding and downhill skills in a natural environment. Freeriding originated on Vancouver Island, British Columbia, when mountain bikers saw the need to build ramps to keep off the saturated and fragile forest floor. Since the mid-1990s, freeriding has grown in popularity and has become a beloved sport within the mountain biking community. "Freeriders" tend to bike in wooded areas that house a combination of singletrack trails and fire roads, often owned by federal and state agencies. Freeriding enthusiasts build their own wooden tracks, ramps, jumps, and other obstacles often in cooperation with land managers. The use is typically facilitated through negotiated use agreements and liability waivers.

The project site currently supports mountain biking activities and several informal trails already exist. Currently, members of the freeriding community are coordinating with Portland Parks and Recreation to identify new locations in the Portland metropolitan area. The project site's steep grades and forested areas may provide the space the community is looking for.

## Associated Facilities

As specified by The International Mountain Biking Association, freeride areas should be constructed in stages. Freeriders should begin by constructing challenge elements within forested sections. Once the demand for greater challenge and more technical trails arises, freeriders can begin to expand their facilities within the given acreage.

## Space Requirements

Space requirements depend on available acreage and the number of elements freeriders are able to construct within their formal use agreement. One of the largest trail networks for freeriding in Oregon contains over 900 acres and six miles of singletrack dedicated to mountain biking and freeriding. However, a fewer number of facilities exist within urban areas. As such, the project site may fulfill a growing need for this increasingly popular sport.

## Suitable Locations

Zone 5 is densely wooded and would provide the most technical terrain for a freeriding facility. In addition, the Zone already supports an informal singletrack trail that could be expanded by utilizing the Zone's dramatic

## At A Glance

***Project site currently used for mountain biking activities***

***Freeriders would be solely responsible for construction and use of freeriding bike facility***

***Limited liability to ODOT in permitting use given recent agreements throughout Oregon***

***Increasing demand for such a facility in the Portland metro area***

## Freeriding Bicycle Facility Cont'd



Freeriding trail

slopes to construct challenge elements such as ramps, jumps and wooded tracks above the forested floor. Outside of Zone 5, freeriders could build ramps off of small, elevated mounds within Zones 2 and 3 (Map X).

### **Access Requirements**

Bicycles could access the site from the north via the railroad bridge in Zone 1 and from the south via the I-205 multi-use path.

### **Ownership, Operations, Maintenance, Liability**

A freeriding bicycle facility would require a permitted use agreement between a freeride association and ODOT. The agreement would permit ODOT to retain ownership and remain free from all liability and risk associated with the use. In addition, members of the freeride association would be responsible and liable for maintaining the bicycle facility and trail system. This type of use agreement is similar to other permitted freeride facilities across the State. Operations and maintenance activities could be established according to ODOT's interests. Costs associated with operating and maintaining the bike facilities would be shared by members of the association.

### **Estimated Cost**

Under the type of use agreement described above, the freeride association would incur all costs of construction and maintenance of the facility. Costs could be cut by utilizing fallen logs and existing ramps on the site.

### **Neighborhood Benefits**

A freeriding bike facility would benefit mountain bike enthusiasts of all ages living within Portland and the surrounding region.

### **Compatibility with Other Potential Uses**

A freeriding bike facility could be compatible with other suggested elements such as walking/jogging trails, although they would have to be separate to minimize risk and ensure user safety. Louder and more resource-intensive uses such as a light rail maintenance facility and debris reclamation activities may be distracting and inhibit users' enjoyment of the site.





Freeriding ramps



## Map 21 - Greenhouses





# Greenhouses

4

## Description

A use that has previously been considered for the project site is a growing site for a future horticultural center in the Gateway District. While soil conditions on the project site are not suitable for plant production without importing a significant amount of topsoil, greenhouses could be a more feasible method of growing test crops for a nearby horticultural center.

## Associated Facilities

Greenhouses come in a wide variety of sizes, materials, shapes, and durabilities. The type and size of the greenhouse will depend on the amount and type of plant materials to be grown and the desired life expectancy of the structure. Generally, the necessary facilities for greenhouses production are the greenhouse structure, a service building for storage, and water and electrical services. An adequate water source is particularly critical for the operation of a greenhouse, with a 20,000 square-foot greenhouse requiring a minimum 2-inch water main that can accommodate a 50 GPM flow and a 50,000 square-foot greenhouse requiring a 3-inch main.

## Space Requirements

The space requirements for greenhouse production would depend on the number and size of the greenhouses desired by the horticulture center. The minimum amount of land necessary per greenhouse can be estimated by doubling the area covered by the proposed greenhouse to allow for access, a storage building, and future expansions. Typically, storage buildings are 13% of the floor area of the greenhouses.

## Suitable Locations

Adequate sunlight and water must be available for the greenhouses to function; therefore, Zones 1, 2 and the southerly part of Zone 3 would be most suitable for locating a greenhouse as these zones have adequate sunlight and would be within relatively close proximity to a water source.

## Access Requirements

The construction of greenhouse facilities would require access by trucks to haul in construction materials and may require a small excavator. Regular site access between the horticulture center and the greenhouses could be via foot and small utility vehicles on the I-205 path; however, special permission would need to be obtained from ODOT to run motorized vehicles on the path.

## At A Glance

***More feasible for plant production than planting on-site, given poor soil conditions***

***Adequate water source is critical***

***Operations and maintenance could be the responsibility of associated horticultural center***

## Greenhouses Cont'd

### **Ownership, Operations, Maintenance, Liability**

Operation, maintenance, and liability of the greenhouse facilities would be the full responsibility of the horticulture center, thereby relieving ODOT of any liability risks or maintenance responsibilities.

### **Estimated Cost**

Low-profile glass greenhouses run approximately \$13.50-16.50 per square-foot and low-profile polyethylene structures cost approximately \$10.50-12.50 per square-foot. These estimates include the structure with a cover, heating and cooling systems, plumbing and wiring, but do not include labor costs, utilities, or accessory items.

### **Neighborhood Benefits**

The project site would serve as productive growing space for an education-based horticultural center that would provide jobs and attract people to the Gateway District.

### **Compatibility with Other Potential Uses**

Due to the site's relative isolation, vandalism and theft could be an issue. The introduction of other uses on the site could help alleviate these concerns; however, fencing or other security measures for the greenhouse facilities would be necessary.



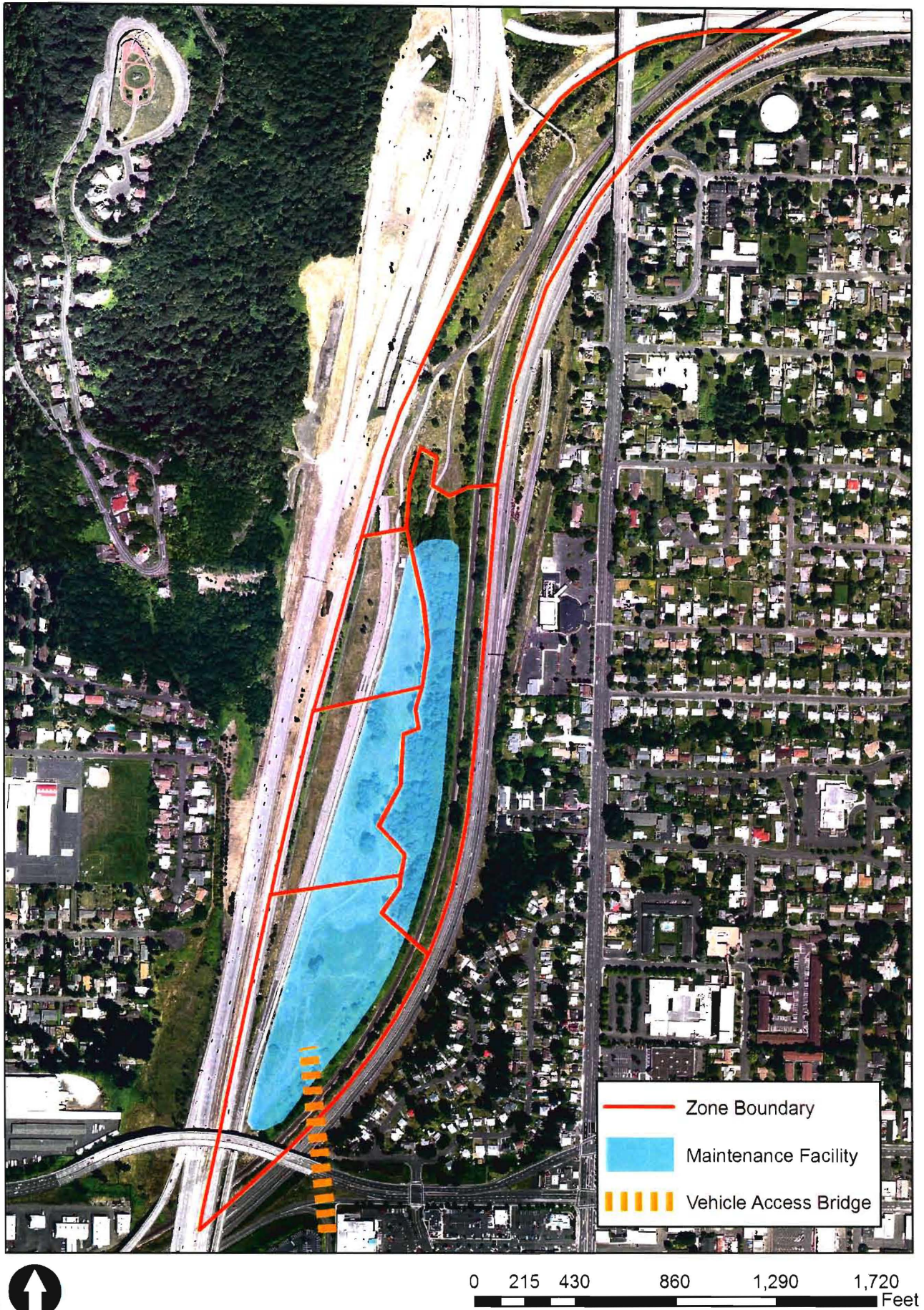
Example green houses







## Map 22 - Light Rail Maintenance Facility





# Light Rail Maintenance Facility

4

## Description

TriMet has expressed interest in developing a light rail maintenance and storage facility within project site. With existing facilities nearing capacity, future rail expansions could trigger the need for additional facilities (though a specific timeframe is unknown). Given its proximity to existing and future rail corridors, the site is viewed as an optimal location by TriMet.

## Associated Facilities

A maintenance facility would include a large covered structure to accommodate multiple light rail trains. The facility would also require several “loop tracks” connecting with the existing trackway to enable trains to enter and exit the facility. A new vehicle access road and bridge would link the facility with NE 99th Avenue near Gateway Transit Center.

## Space Requirements

TriMet’s conceptual site plans depict a 16-acre facility covering lands in the southern portions of Zones 2 and 5, and throughout most of Zones 3 and 4. The I-205 multi-use path would be relocated west of the existing light rail tracks to avoid path/rail crossings.

## Suitable Locations

The project site’s southern area would likely serve as the most suitable maintenance facility location its given wide cross-section and close proximity to existing and planned rail lines passing through Gateway Transit Center.

## Access Requirements

Trains would access the maintenance facility via “loop tracks” connecting with the existing trackway. Although a new vehicle access bridge would link the facility with NE 99th Avenue, TriMet would likely limit bridge access to facility employees and emergency vehicles.

## Ownership, Operations, Maintenance, Liability

TriMet would likely assume responsibility for facility ownership, operations, maintenance and liability (though the agency could potentially lease the land from ODOT).

## Estimated Cost

TriMet staff indicate that this type of facility could cost at least \$100 million. Though this estimate includes structure and track-laying costs, it

### At A Glance

***Sufficient space available for facility***

***Close proximity to existing/future rail corridors***

***Cost: \$100 million or more***

# Light Rail Maintenance Facility Cont'd

does not include costs associated with a new vehicle access bridge or relocating the I-205 path.

### Neighborhood Benefits

A light rail maintenance facility would not generate substantial positive or negative neighborhood impacts. The facility could negatively impact adjacent neighborhoods by occupying space currently serving informal recreational uses, however a facility could generate positive regional impacts by accommodating the maintenance needs of TriMet's expanding light rail system.

### Compatibility with Other Potential Uses

The light rail maintenance facility's space and locational requirements could limit its compatibility with other potential land uses, especially if other land uses would only be feasible in the project site's southern area. Although the facility's restricted access could limit the potential to combine this use with other public uses, the proposed vehicle access bridge could jointly serve the maintenance facility and adjacent land uses if approved by TriMet.







Map 23 - Agricultural Development





# Agricultural Development

4

## Description

Agricultural development on the project site is an alternative that the Bureau of Planning has investigated (Bureau of Planning 2004). Oregon's economy is heavily tied to the agricultural industry, but urban populations know little about this industry due to a cultural disconnect between urban and rural areas. To address this issue and bridge the gap between urban and rural economies, the project site could be used to showcase Oregon agriculture and educate urban populations about farms and food sources.

Because the project site is located within proximity to several transportation corridors that introduce a multitude of water and/or airborne petrochemicals and other pollutants to the site, it is not recommended that the site be used to grow food for human consumption unless plants are grown in greenhouses (see Greenhouses section) or some protection methods are used.

It is also important to note that soils within the project site are poor and would require substantial improvements, including the removal of buried freeway debris and the addition of topsoil and other soil amendments.

## Associated Facilities

This element would include tapping into abandoned utility lines from the historic Rocky Butte Jail. Improved access to the site would also be necessary for larger vehicles and trucks to transport dirt, construction materials, and related items to the site as well as the removal of plant stock and compost from the site.

## Space Requirements

To be economically feasible, a substantial amount of space is needed. Open space for growing may consume 50% or more of the site's acreage, thus making it more difficult to share the site with other uses.

## Suitable Locations

Because of the project site's sloped edges, growing operations are limited to the flatter areas of Zones 2, 3, and portions of Zone 4. Because of the project site's natural rocky soils, drainage improvements may not be needed. Wetland pockets in Zone 3 have less drainage, but these areas are relatively isolated and actually drain the surrounding terrace. Zone 3 also contains the deepest and most fertile soil in the project site, which may require less effort to improve. However, Zone 3 may contain juris-

## At A Glance

***Soils are poor and would require substantial improvements***

***Requires existing utilities and improved access***

***Requires more than 50% of the project site, including Zones 1-4***

***ODOT partnerships or lease agreements available***

## Agricultural Development Cont'd

ditional wetlands, which would require surveys and permits if impacted.

### Access Requirements

Access for large vehicles to and from the site would be required. As such, the existing northern access point would need to be improved requiring coordination with Union Pacific Railroad.

### Ownership, Operations, Maintenance, Liability

Ownership, operations, maintenance, and liability responsibilities would depend on what is grown onsite, but several options exist. ODOT would presumably not be involved unless they decide to grow plant stock for use in beautification or restoration projects within the right-of-way. They could also contract with a private nursery to grow stock onsite for ODOT projects. The Portland Parks and Recreation Horticulture Division could also expand their operations and grow native plants onsite for local public agency restoration projects, park improvements, and commu-

nity development programs. There is also opportunity for Oregon State University's and Portland State University's horticulture programs to utilize the site for research, specifically in future food production in a land scarce environment (e.g., permaculture and hydroponics).

Other potential partnerships also exist in the community. Hacienda Community Development Corporation's (CDC) Verde Native Plant Nursery has partnered with the Columbia Slough Watershed Council (located just north of the project site), to grow stock within the Council's plan area (Linda Robinson, Portland Naturescaping Program, pers. comm., June 1, 2006). The nursery employs Latinos and other CDC residents and teaches them about the industry while connecting them to broader sustainable development efforts in the Portland region. Stock is marketed to businesses and agencies conducting Portland-area wetland and stream restoration projects, and after seven years of operation, the ownership will be transferred to its employees. The project may be a great use for the site since it represents agriculture in urban areas and social/environmental sustainability.



Zones 2 and 3 have level topography for growing although soils are poor



### Estimated Cost

Costs could be covered through the cooperation of several entities. Depending on what and who is growing on-site, costs could be covered through one of the partnerships described above. Removing buried free-way debris and improving soils on the site may incur the greatest cost.

### Neighborhood Benefits

If the surrounding neighborhoods could visit the site either freely or during organized events, the opportunity for public benefit would greatly increase. With nursery operations, there is potential for people to learn how to grow and care for plants. However, if it consumes too much space, other elements that the community may value more such as recreation uses or a dog park may be compromised.

### Compatibility with Other Potential Uses

Agriculture development and adequate access commands a large amount of space that could consume a large portion of Zones 1, 2, 3 and 4. However, walking/jogging and mountain biking around the perimeter of the site and in Zone 5 could be compatible. Renewable energy production could also be compatible since it is relatively space-efficient.

Whereas other elements could co-exist with agricultural development, debris reclamation would greatly benefit this element because the soil would be improved. The removal of concrete and other man-made debris and returning the land to more of a natural state could serve as a case study in reclaiming urban land to more ecologically productive purposes while still allowing for human activities.



Photo: Medford Nursery

Oregon's Agriculture Industry



Map 24 - Off-Leash Dog Area





# Off-Leash Dog Area

4

## Description

Unofficially, the project site is currently used as an off-leash area by nearby residents. Most users appear to be coming from the northern access point adjacent to residential neighborhoods.

The project site is an ideal location for an off-leash area because the I-205 and I-84 freeways buffer it from nearby neighborhoods both in terms of noise and access. Fences exist along the entire western boundary between the I-205 path and the MAX line. The topography along the eastern side of the site creates a natural barrier that keeps dogs from getting loose from the site and disturbing neighbors or causing points of conflict between animals and cars. Further, there are few existing uses on the site that would compete with the off-leash area. Installation of fencing near the bike path would take care of potential conflicts between bicyclists/pedestrians and the off-leash dog area.

## Associated Facilities

Amenities that are essential for any off-leash area include 4- to 6-foot fencing or other barriers, a grassy area, water and shade, covered garbage cans, waste scooper stations, benches, and signage.

## Space Requirements

Off-leash areas can be as small as 10,000 square feet (60' x 120'), but ideally should be a minimum of 30,000 square feet (about the size of four tennis courts). Given the project site's large size, an acre or more would provide an ample area that could be easily contained and made compatible with uses in other areas of the site.

## Suitable Locations

Zones 1 and 2 are the most suitable locations for an off-leash area because they are in the northern part of the site nearest to residential neighborhoods, have open grassy areas with scattered trees for shade, and contain remnant water lines from the demolished Rocky Butte Jail that might be tapped as a water source.

## Access Requirements

The existing access point via the bike path on the north end of the site is sufficient to access Zones 1 and 2, but is only convenient to neighborhoods north of the site. On-street parking would be necessary at the nearest vehicle access point to the path for users that do not live in the immediate neighborhood.

## At A Glance

***Ideal location for off-leash area given natural and man-made barriers on and around the site***

***Northern area of the site is best location due to proximity to nearby residential neighborhoods and presence of both grassy and shady areas***

***30,000 square feet minimum space requirement***

## Off-Leash Dog Area Cont'd

### **Ownership, Operations, Maintenance, Liability**

The Portland Bureau of Parks and Recreation would likely resist taking on operations, maintenance, and liabilities associated with an off-leash dog area on the project site; however, the Bureau has an Off-leash Advisory Committee (OLAC) that was formed in 2003 that could be a source of valuable policy and management information to non-profit or private groups interested in taking on the responsibility for the maintenance and monitoring of the off-leash area.

An example of a non-profit organization that takes on the stewardship of off-leash areas is Citizens for Off-leash Areas (COLA) Seattle. COLA organized a successful effort to include off-leash areas in various parks and open spaces around Seattle and currently has an agreement with the Seattle Parks and Recreation Department to perform regular maintenance and monitoring functions of these off-leash areas, although the ownership and liability still remains a responsibility that of the Parks Department. In the event that a similar arrangement is not feasible between a local non-profit group in the Portland area and the Portland Bureau of Parks and Recreation, creative solutions should be explored that may include having the Bureau provide insurance for the off-leash area, while the non-profit group would pay the premiums.

Partnerships with local pet advocacy groups and businesses could be formed in order to provide funding for the necessary amenities, such as waste-scooping stations, garbage cans, and benches.

### **Estimated Cost**

Design and construction costs vary depending on the location and amenities of the off-leash area. The estimated costs of the four existing off-leash areas in Portland range from \$5,000 to \$30,000. Maintenance and operation costs also vary, depending on the frequency of mowing and waste pick-up.

### **Neighborhood Benefits**

The project site is a fairly isolated area that would provide a designated space for dogs to exercise and play without endangering or bothering people or property. Having a place to run free and socialize helps reduce problems of barking, running loose, and aggression in dogs that are confined to typically small residential homes or lots..



### Compatibility with Other Potential Uses

Since the off-leash area would need to be fenced-in, and a bicycle/pedestrian path would provide access to other areas of the site without the need to pass through the off-leash area, this use could be compatible with potentially any use on the site.



Map 25 - Public Park



— Zone Boundary  
Potential Public Park Areas

0 210 420 840 1,260 1,680 Feet



# Public Park

4

## Description

Although ODOT has indicated that a park use on the project site is not desirable considering the site's classification as an operating right-of-way, such a use should not be entirely discounted when considering the severe open space and park deficiencies in the Gateway District. Currently, there is only one park (Floyd Light School) available in the entire Gateway URA and there is little funding available for acquiring new park space in the future.

While ODOT's concerns about utilizing the site as a park are not unfounded (once a site has been designated a park, it becomes difficult to reclaim it for other uses at a later time), it seems a waste to leave the site unused in such a park-deficient area. A solution could be to have a "Friends of" group or other non-profit organization take on maintenance and operations of the site for light recreational uses until such a date that ODOT requires part of (or the entire) site for freeway expansion or mitigation purposes. Additionally, limiting the permitted uses on the site to more passive recreational activities such as picnicking and walking/jogging on inexpensive soft surface trails and classifying the site as a temporary green space or recreational space may remove the expectation of permanence typically associated with parks.

## Associated Facilities

Necessary facilities would depend on the type of uses allowed by ODOT. If light recreational uses such as soft surface trails and picnicking are approved, then structures such as benches, picnic tables, lighting, covered trash cans, signage, and restroom facilities (portable or composting toilet) would be adequate.

## Space Requirements

Space requirements vary and would depend upon the proposed use and negotiations with ODOT.

## Suitable Locations

All five Zones are suitable for light recreational uses.

## Access Requirements

Access would be necessary in order to haul away trash and to bring in mowers on a relatively regular basis. A defined emergency access point would also need to be identified and improved to fire department standards in order to ensure a quick response time and to reduce liability

## At A Glance

***Facility, space requirements, and cost would depend on size and amenities of the park***

***Would serve community need for open space and recreation***

***"Friends of" or other park advocacy groups could partner with Portland Parks & Rec. for operation and maintenance of the park***

***Should clearly be defined as a transitional or temporary use on the site***

## Public Park Cont'd

issues on the site.

### **Ownership, Operations, Maintenance, Liability**

ODOT would like to off-load their maintenance and liability responsibilities on the site while still maintaining ownership. The transference of these burdens to a non-profit or private group would relieve ODOT of their responsibilities, while providing a much needed amenity to the nearby neighborhoods and the Gateway URA. A "Friends of" group could be established or an existing parks advocate group could take on the maintenance and operations of the park use on the site. Funding may be available from grants such as the Nature in Neighborhoods grant program offered by Metro.

### **Estimated Cost**

Estimated costs vary depending on the desired amenities, adequate drainage, environmental mitigation, and the quality of the development. Local data on park acquisition suggests that development can range between \$70,000 to \$470,000 an acre even without major facilities or ballfields. Community parks tend to be more expensive at the higher end of the range than neighborhood parks.

### **Neighborhood Benefits**

Given the severe lack of parks and open space in the district, there would be substantial neighborhood benefits of even light recreational uses on the site.

### **Compatibility with Other Potential Uses**

Park-like uses will attract more people to the site, which increases the potential for conflicts with other uses and raises security issues. However, as more people utilize the site, it can also provide a greater sense of safety for all users. Security measures such as fencing or other barriers may be necessary for certain uses (e.g. greenhouses and solar arrays) to prevent vandalism or allay safety concerns.







Map 26 - Walking/Jogging Trails





# Walking/Jogging Trails

4

## Description

A system of walking and jogging trails could be developed throughout the project site, either consisting of a single loop or multiple trails. Targeted for the specific use of walkers and joggers, the trail(s) would include a soft surface to discourage in-line skaters and bicycle traffic. Other provisions would be necessary to discourage mountain bikers.

## Associated Facilities

A preferred walking/jogging trail surface is typically constructed of wood planer shavings. A by-product of the logging process, the shavings are made by grinding the outer bark of felled trees. A typical trail cross-section includes 3 to 4 inches of wood planer shavings. The shavings would be placed atop 3 to 4 inches of aggregate base and about 2 inches of crushed rock. A perforated drain with "drain rocks" would parallel the trail in areas with varying topography or poor surface drainage. Optional items include trail distance markers, interpretive signs and resting areas.

## Space Requirements

Trail widths vary depending on factors including physical and topographical constraints, as well as the number of concurrent users. These trails typically include an 8-foot width and a 1- to 2-foot buffer on each side. Appropriate vertical clearances are also necessary in highly vegetated areas.

## Suitable Locations

Within the project site, the most suitable locations include the southern portion of Zone 1; areas east of the I-205 path in Zones 2 and 3; the central portion of Zone 4, and the vegetated portions of Zone 5. The trail system should not cross the Union Pacific Railroad, and crossings with the I-205 path should be avoided to minimize conflicts between foot and bicycle traffic.

## Access Requirements

The two existing public access points could adequately serve a walking/jogging trail system within the project site. Access for trail maintenance and emergency vehicles however would remain an issue.

## Ownership, Operations, Maintenance, Liability

As the current land owner, ODOT could construct the trail system and assume these responsibilities, however the agency has indicated a desire to avoid direct involvement with any new uses. Alternatively, ODOT

## At A Glance

***Multiple layout options possible***

***Cost: As much as \$250,000/mile***

***Compatible with most land uses***



Walking/jogging trail

## Walking/Jogging Trails Cont'd

could lease the land to another government or non-government entity. The lease could defer responsibilities to this agency/organization, and include a clause allowing ODOT to resume control of the land if needed.

### Estimated Cost

The estimated cost of a walking/jogging trail system could vary based on several factors including trail length, width and drainage requirements. Other factors include topography and the degree of grading and erosion control necessary during construction. For this evaluation, higher unit costs were used to develop a conservative cost estimate.

Assuming an average width of 8 feet, a walking/jogging trail could cost about \$250,000 per mile. This estimate includes trail grading, erosion control fencing, "drain rock", aggregate base, a wood planer shavings surface and a perforated pipe for drainage. The costs could substantially decrease if a perforated pipe is not necessary. It should be noted that this estimate does not include costs for other potentially necessary trail components, including retaining walls and handrails. Trail distance markers could cost as much as \$400 each.



Trail distance marker

### Neighborhood Benefits

A formalized trail system could help address Gateway's recreational needs. The trail system could attract more visitors to the area, thereby strengthening a community connection with the project site.

### Compatibility with Other Potential Uses

Because a walking/jogging trail system is fairly flexible in terms of physical layout, this land use element could be integrated with most of the potential land uses highlighted in this report.







Map 27 - Solar PV Array





# Solar PV Array

4

## Description

Over the course of this project there have been several suggestions to use portions of the site as a demonstration project renewable energy production. Although the site is not ideally suited for solar energy production, it is highly visible to approximately 200,000 daily motorists and transit riders that pass by. The positioning of one or more photovoltaic (PV) panel arrays could serve as a powerful example of the region's commitment to renewable energy and create an identity in a district that currently goes unnoticed. Power produced could also be used on the site (e.g., stored in batteries) or tied to the existing energy grid. Although the size and electrical output of a PV array can vary greatly, the following table is used to illustrate one possible configuration.

## Associated Facilities

Other than small weather-proof enclosure for the inverter(s), no facilities would be needed. The inverter housing could be located with each array, or in a centralized location. A larger PV array would use a larger inverter that may require a small shed-like structure for protection from weather and to prevent vandalism.

## Space Requirements

Each pole-mounted PV would require approximately 123 square feet (8'6" x 14'6").

## Suitable Locations

Beyond solar access, the main criteria for identifying suitable PV array locations on the site are security and compatibility with other potential uses. Currently, the most secure locations are fenced areas located along the west side of Zone 1 and along the west side of Zones 1-3. On the north end of the site, Zone 1 contains a fenced area that is visible from northbound auto traffic on I-205. Zone 2, located on the central western side of the site, is fenced and further protected by I-205 on the west side and the MAX line on the east side. Additional locations may be identified, but would require fencing.

## At A Glance

***Electricity generated by panels could be used on site, or be grid inerted***

***Two site locations are already fenced and would make secure locations for panels***

***Panels could be place near road for high visibility***

## Technical Specifications: Sanyo Grid-Tied Array

PV Array Total Watts	1,900
PTC Rating Watts	1,787
Number of Panels	5 x 2
Brand & Size & Model of Panels	Sanyo 190W HIP-190BA3
Brand & Size of Inverter	Fronius 2000
Output VACC	240
Cost	\$14,196

## Solar PV Arrays Cont'd

### Access Requirements

Solar PV installation crews would likely require light-duty vehicle access to the turbine location for the initial installation, and then occasional light-duty vehicle access for long term maintenance.

### Ownership, Operations, Maintenance, Liability

Several ownership/maintenance scenarios exist for placing solar PV array(s) on the site. The PV array(s) could be owned and maintained by ODOT. An agreement could also be entered into between ODOT and another agency, company, or private individual. It is reasonable to



Solar PV Array

believe that any number of solar electrical businesses would be willing to own and operate an array on this site for marketing purposes. Another option would be a partnership between multiple agencies and/or organizations. An example of this type of partnership in Portland is at the Zenger Farm Urban Agricultural Park, where Portland General Electric and the Energy Trust of Oregon donated \$42,000 to fund a 36 panel, 6-kilowatt array.

Another option is for TriMet to own and operate the solar PV array. Energy produced by the system could tie directly into their MAX light rail electrical lines. This would be an opportunity for the organization to promote renewable energy and the project would be highly visible to MAX passengers traveling north and south through the site.

### Estimated Cost

Based on the previously defined sample system, the estimated cost is approximately \$14,196 retail (before discounts). Currently, a system's cost can be discounted up to \$10,000 through incentives provided by the Energy Trust of Oregon and additional Oregon state tax credits of \$1,500.

### Neighborhood Benefits

Although the solar PV array would not provide a measurable electrical benefit to the neighborhood, they would receive a highly visible icon that might help create a regional identity. Additionally, there is great potential to open the site to educational programs, both on-site and at future



educational facilities in the Gateway area.

**Compatibility with Other Potential Uses**

PV arrays take up space on the ground, but are entirely compatible with additional uses on the site.



Map 28 - Large Wind Turbine





# Large Wind Turbines

4

## Description

Over the course of this project, there have been several suggestions to use portions of the site to demonstrate renewable energy production. Although the site is not ideal for wind energy production, it would be highly visible to approximately 200,000 daily motorists and transit riders that travel through the area each day. The positioning of one or more large-scale wind turbines on the site could serve as powerful example of the region's commitment to renewable energy and create an identity in a district that currently goes unnoticed. Power produced could also be used on the site (e.g. stored in batteries) or tied to the existing energy grid. The table on the following page provides technical details for a turbine that could be constructed on the project site. The turbine is produced by the Danish company Vestas.

## Space Requirements

The space required for the tower is very small (12-foot diameter), the turbine tower would have a negligible impact on the site and most other terrestrial uses. However, the height of the tower and the span of the blades do take up air space and may require that special consideration be given to current height restrictions imposed by the airport zone overlay.

## Suitable Locations

Determining optimal wind availability for the site would require a complete wind site assessment, which is outside the scope of this project. The locations evaluated for this project will be based on terrestrial site conditions only. High terrain to the east and west of the site would suggest that the turbine be sited at the highest elevation(s), as the highest elevations in any given area tend to have the highest average wind speeds. The higher locations also tend to increase visibility to passing traffic and the surrounding community. The three highest locations on the site are located in Zones 1, 4 and 5.

## Access Requirements

Turbine installation crews would likely require heavy-duty vehicle access to the turbine location for the initial installation, and then lighter-duty vehicle access for on-going maintenance.

## Ownership, Operations, Maintenance, Liability

Vestas has offices located in Portland, Oregon and could be an ideal owner and operator of a turbine on the site. The arrangement could

## At A Glance

***Turbines could be placed in highly visible locations to create a recognizable landmark and to promote renewable energy technologies***

***Turbines use very little ground space and would be compatible with other uses***

***Opportunity to collaborate with local wind turbine companies***

UPA LIBRARY

## Large Wind Turbines Cont'd

serve as beneficial advertising for the firm while also achieving the goal of demonstrating regional support for renewable energy and creating an image for the Gateway community.

### **Estimated Cost**

The price of wind turbines depends on many parameters, including turbine type, foundation type, the location of the site, and transportation. Therefore, it is difficult to obtain exact costs. The approximate cost (minus ongoing maintenance) for a Vestas V52-850 kW turbine is between \$500,000 and \$1,000,000.

### **Neighborhood Benefits**

Although the wind turbine would not provide a measurable electrical benefit to the neighborhood, they would receive a highly visible icon that might help create a regional identity. Additionally, there is great potential to open the site to educational programs, both on-site and at future educational facilities within the Gateway URA.

### **Compatibility with Other Potential Uses**

Because the turbine has such a small footprint, it is highly compatible with most other uses. There are no foreseeable site use conflicts. However, it is possible that the neighboring community may perceive one or more wind turbines as an eyesore and a disruption to their viewshed. Also, the presence of a large spinning wind turbine may distract passing motorists, increasing the potential for automobile crashes.



Wind Turbine



**Technical Specifications: Vestas V52-850 kW****Rotor**

Diameter	52 meters
Swept area	2,124 square meters
Speed revolution	26 RPM
Operational interval	14.0 - 31.4 RPM
Number of blades	3
Power regulation	Pitch/OptiSpeed
Air brake	Full blade pitch

**Tower**

Hub height (approx.):	40 - 44 - 49 - 55 - 60 - 65 - 74 - 86 m
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**Operational data**

Cut-in wind speed:	4 m/s
Nominal wind speed:	16 m/s
Stop wind speed:	25 m/s

**Generator**

Type:	Asynchronous with OptiSpeed®
Nominal output:	850 kW Operational
Operational Data:	50/60 Hz 690 V



Map 24 - Small Wind Turbine





# Small Wind Turbines

4

## Description

Although Portland generally lacks the steady winds necessary for large-scale wind power production, small or “micro” wind turbines can perform well in low-wind regimes. Micro turbines are typically used for the small-scale production of power where grid connections are not feasible and are commonly used on boats, to power electric fences, or to pump livestock water. There is no official size classification for micro wind turbines, but some classify micro turbines as having a rotor diameter of 2 to 4 feet with a generator capacity of 20 to 300 watts.

Because of the relatively small output of power that is produced by micro turbines, they are not ideal as a grid-connected project and are better suited for battery charging, although a grid connection is possible. Given the lack of steady winds in the Portland area, a hybrid of micro wind generators used in conjunction with solar power would greatly improve the reliability and cost effectiveness of the project and would reduce the amount of battery storage that is needed.

For application on the project site, a demonstration of micro wind energy production could include retrofitting the existing light poles along the I-205 path with hybrid micro wind/solar energy devices to power the lights or free-standing micro wind turbines as a public art project.

## Associated Facilities

Micro wind turbines should be mounted on poles or other structures that are at least 20 feet tall in open terrain. However, greater heights are preferable. The turbines may be installed on existing or new light poles and would require control panels, batteries, and an inverter for each installation. Free-standing turbines on towers or guyed poles should be fenced off for safety and security. Turbines on monopoles would not require any extra security measures.

## Space Requirements

No additional space would be necessary for the installation of turbines on existing or new light poles as the ancillary equipment may be installed in an underground vault.

Free-standing structures, such as guyed towers, require more space for the tie-down wires and to provide an adequate safety buffer. Given the possibility of one or more of the tie-down wires failing, it is recommended that other uses and structures be separated from a guyed tower by more

## At A Glance

***Existing light poles along path could be retrofitted with micro turbines***

***Demonstration art project using micro wind turbines – possible funding could be available from TriMet***

***Micro turbines not ideal for grid connection***

***Hybrid of solar panel and micro turbine would increase reliability***

## Small Wind Turbines Cont'd

than twice the height of the tower and in public applications should be fenced off.

### Suitable Locations

Turbines should be located on the highest points of the site where possible and away from trees. Zones 1 and 4, and portions west of the light rail tracks in Zone 3 are the best locations on the site due to their higher elevations and open terrain.



Solar/wind powered light

### Access Requirements

Access by a standard sized truck or a bucket truck is adequate to haul in parts and tools for the installation and maintenance of the turbine structures.

### Ownership, Operations, Maintenance, Liability

Wind turbines should be inspected at least twice a year in the spring and fall to assure that the systems are operating correctly. If micro turbines were added to existing light poles, the maintenance and operations of these systems could fall with ODOT, which currently maintains the I-205 path and its associated facilities.

As a public art project, there is a possibility that wind turbines could be installed on the project site and maintained by TriMet, which has a public art program to fund such projects. For example, TriMet is currently working on an art project involving micro wind turbines at the Lents Town Center. The project is being paid for by TriMet with a budget of \$50,000 and will consist of up to 16 micro turbines mounted on recycled monpoles. Maintenance of the turbines will be performed by TriMet.

### Estimated Cost

Costs for micro wind generators will vary depending on the manufacturer, model, and type of installation. The cost of one turbine (not including solar panels for hybrid installations) can run between \$2,000-\$2,500 and does not include the cost of installation, which varies widely amongst manufacturers. Discounts from local manufacturers might be possible in exchange for advertising, and additional funding may be available from the Energy Trust of Oregon.





### **Neighborhood Benefits**

Powering the existing light poles with wind and solar power will most likely reduce energy costs for lighting on the site and would provide a visible demonstration of alternative energy production and educational benefits. A public art installation, though limited in its potential energy use, would also provide a visible demonstration of alternative energy that could establish the site as a landmark that contributes to the identity of the Gateway District.

### **Compatibility with Other Potential Uses**

Installation of micro wind turbines on existing light poles would be compatible with any of the potential uses on the site since the structures are located atop existing poles that are well out of reach of other users on the site. Free-standing turbines associated with an art project would require more space and security features, but could be compatible with other uses provided that an ample buffer between the structures and other uses on and around the site is allowed.



Map 25 - Solar Composting Restroom





# Solar Composting Restroom

4

## Description

Various site use scenarios would benefit from access to public restroom facilities. Solar powered, composting toilets could be constructed on the site to serve current trail users and any potential future site users. These types of facilities have proven successful and are currently in use at several national parks.

In addition to acting as a restroom, the facility is also a symbol of the region's commitment to renewable energy and sustainable technology. By using passive solar energy to safely compost human waste on-site, the facility would eliminate the need for expensive, resource intensive plumbing and sewer infrastructure.

## Space Requirements

Restroom facilities can vary from a minimum size of approximately 4' x 8' up to whatever size is needed to meet expected demand.

## Suitable Locations

A suitable location for a public restroom would be anywhere immediately adjacent to the existing bicycle and pedestrian path. Installation costs and accessibility could be improved by selecting any of the several locations where the path is at grade with surrounding terrain.

## Access Requirements

The restroom should be easily accessed from the existing bicycle and pedestrian path and be ADA compliant. Light-duty vehicles would need occasional access for initial construction and on-going maintenance.

## Ownership, Operations, Maintenance, Liability

This facility could be owned by any number of potential site users.

## Estimated Cost

Depending on the final configuration, this facility could cost anywhere from approximately \$1,500 to \$10,000 (and up).

## Neighborhood Benefits

This type of facility would offer direct benefits to all users of the site.

## Compatibility with Other Potential Uses

This facility is intended to be complementary to other site uses and is not in conflict with any use currently being proposed on the site.

## At A Glance

***Restrooms would benefit other uses on the site***

***Basic models can be inexpensive***

***Promotes sustainable technologies and principles***

***Less infrastructure requirements***



Map 26 - Stormwater Management





# Stormwater Management

4

## Description

Stormwater could be diverted to the site for containment and infiltration. As mentioned in an Otak stormwater analysis report prepared for ODOT (see sources), the project site could successfully infiltrate 262 acres of ODOT right-of-way and 403 acres City lands, drastically reducing demand on the main pipeline. This may prove especially important in future highway expansion projects where current stormwater regulations require treatment prior to entering waterways and to offset stormwater rate and quantity. The stormwater report suggests that the entire site could be used to manage stormwater.

## Associated Facilities

To divert stormwater from the main pipe along I-205 and from I-84, lateral lines would need to be installed connecting existing stormwater piping to the project site. The main pipe is higher in elevation than the project site, so extending existing lateral lines to the project site may prove challenging. Along I-205 exists a series of lateral lines that extend toward the project site from the main pipe and I-84. These laterals could be retrofitted with piping extending to the project site.

The project site would also require some alterations to accommodate stormwater outflow. The Otak report recommends mechanical means including sand filters and settling ponds. Any stormwater diverted to the site would require permits as administered under the Safe Drinking Water Act. If any wells exist on site, the permit process is also more stringent.

## Space Requirements

Space requirements would depend on the volume of stormwater that is diverted to the project site, although enough stormwater would have to be diverted to justify infrastructure costs.

## Suitable Locations

Depending on any current plans ODOT engineers have for the project site, suitable sites may include Zones 1 to 3 where land is flatter in elevation. Wetland pockets in Zone 3 may be jurisdictional and therefore, any impacts would require federal and state permits. However, these pockets are well suited to collect additional stormwater and naturally sit in the lowest elevation area on the site. Additional excavation to widen these wetland areas could help increase the volume of stormwater they could successfully manage. Aside from wetland areas, it is important to

## At A Glance

***Existing stormwater report identifies site as regional collection area***

***Would require pipe extensions and extension facilities***

***Potential wetland site impacts may require permits***

***Potential ownership partnership opportunities between ODOT and Portland Water Bureau***

## Stormwater Management Cont'd

note that although the majority of the site has rocky, well-drained soils, some areas (especially near informal dirt trails) have compact soils that would not allow for adequate infiltration.

### Access Requirements

Access should only be required during pipe installation and the construction of stormwater outfall features on-site. Transportation corridors on both sides of the project site may be disrupted during construction. This may include roadwork and tunneling underneath the roadbed to accommodate the new piping. The construction of stormwater facilities on-site may require temporary access for large machinery. Machinery would have to access the site from the northern end (via the Union Pacific Railroad maintenance access bridge), which could pose significant problems due to space constraints. Most likely, coordination with railroad personnel would be necessary.



Detention pond

### Ownership, Operations, Maintenance, Liability

Realistically, ODOT would likely take ownership, operations, maintenance, and liability responsibilities since ODOT funding and involvement would be required for the pipe installation and location of stormwater outfalls on-site. If outfall sites are “enhanced” by creating visible wetland areas for the public to enjoy, the Bureau of Environmental Services or local urban greenspaces groups such as the Columbia Slough Watershed Council or Greenspaces Institute may be interested in maintaining plantings and/or securing grant funding.

Alternatively, the Portland Water Bureau may be interested in constructing a water treatment facility on the project site. As indicated in Otak’s stormwater report, the project site is designated as a regional stormwater opportunity. The report indicates that the project site could accommodate a large enough volume of water that the Bureau may find incentive to locate there and treat the stormwater by allowing it to infiltrate and recharge groundwater supplies. During the summer, the Water Bureau often draws from groundwater supplies when water levels in Bull Run are low.

### Estimated Cost

Cost would depend on the volume of stormwater diverted to the site and the type of stormwater facilities/treatment methods constructed. A water



treatment plant could cost several million dollars while less engineering intensive methods including sand traps or detention ponds would cost considerably less.

### Neighborhood Benefits

Benefits to the neighborhood from stormwater management would not be direct or tangible. The broader Portland metropolitan area and all people living downstream would benefit from cleaner water in the Columbia River. However, this benefit is hard to prove to the general public. To better educate neighbors, the outfall areas could be constructed to support wetland adapted plants. These wetland areas and/or bio-swales would be visible to visitors. Educational displays could also explain the benefits of stormwater infiltration and ODOT's commitment to a cleaner, healthier Columbia River.

### Compatibility with Other Potential Uses

Stormwater management could extend across the entire site or could be limited to a smaller acreage. There is some flexibility to accommodate other uses. However, in order to make the project financially feasible, the site may have to manage large volumes of water. Smaller stormwater management projects could coexist with any of the other uses suggested in this report and may actually benefit those uses if they require drainage facilities.



Sand stormwater filter



Map 27 - Wildlife Habitat Enhancement





# Wildlife Habitat Enhancement

4

## Description

Despite its noisy surroundings, the project site has potential for wildlife enhancement, specifically for bird species. The open meadowlands of Zones 1 to 4 provide good hunting grounds for raptors. Likewise, Zone 5 provides nesting opportunities for raptors and songbirds. Because the project site is located within a noisy urban environment, adequate wildlife corridors for travel to and from the site are restrictive except for small mammals. As such, larger species, such as deer, likely visit the site sporadically. Little opportunity to reconnect wildlife corridors exists; however, a pedestrian bridge to Rocky Butte State Park may serve this function at night when human disturbances are less likely.

## Associated Facilities

To enhance the project site for bird species, some options exist. Placement of wooden songbird nest boxes and plant restoration projects are most feasible. Plant restoration projects would include the removal of nonnative invasive plant species onsite and replaced with native species that provide fruits and nuts for birds and small mammals through different seasons annually.

An alternate project may include the expansion of the wetland areas within Zone 3. Wetland pockets could be widened by excavating out and area surrounding them. The newly excavated areas could be planted with wetland tolerant grasses and legumes that would provide additional forage for passing songbirds. The large cottonwoods in the area would also provide additional nesting space. Because wetland areas may be jurisdictional, permits may be required for any anticipated impacts.

## Space Requirements

Songbird nest box and plant restoration projects would not require any additional space onsite. Widening the wetland pockets within Zone 3 would require a buffer of approximately 4 to 6 feet depending on the location and access to stormwater influence. An additional number of feet could also be planted with upland adapted species such as oats and barley to provide a buffer between the wetland area and the surrounding lawn.

## Suitable Locations

Several suitable locations for wildlife enhancement exist within the project site. Nest boxes could be secured to trees within Zone 5 and on trees grouped in "clumps" located within Zones 1 to 4. Clumped trees

## At A Glance

***Enhancement opportunities for bird species***

***Options include nest boxes and plant restoration projects***

***Locations include Zones 3 and 5***

***Opportunities for nature-scaping and local schools involvement***

## Wildlife Habitat Enhancement

would provide some cover for birds and less exposure to threats. Selected trees should be located in quieter areas such as the lower lying areas of Zone 3 and Zone 5.

Plant restoration would best be served in Zone 5. The forested area is engulfed in English ivy. Removal of the ivy and subsequent planting of natives such as serviceberry, snowberry, Oregon grape and rose would increase the food stock for birds. Hazel and currant already exist within this zone, and additional plantings would increase the availability of fruit and nuts for birds during the year.

### **Access Requirements**

Existing access via the I-205 path would provide the needed access to conduct wildlife enhancement projects. Although utility vehicles and/or light trucks would need to access the site to transport any vegetation removed from the area, the path and existing utility access at the north end of the site could suffice.

### **Ownership, Operations, Maintenance, Liability**

There is some flexibility in choosing ownership, operations, maintenance and liability scenarios for wildlife habitat enhancement, especially due to the minimal liability threats posed by the projects. ODOT may choose to take ownership and fund projects due to their increasing involvement in wildlife crossings and similar environmental projects within their right-of-way. They could also enter into a maintenance agreement with Portland Bureau of Parks and Recreation (e.g., cleaning out nest boxes, irrigation for initial plant establishment, and plant replacement).

There is also potential for volunteer groups to get involved. For example, the Columbia Slough Watershed Council sits at the northern edge of the project site boundary, and they may want to get involved along with Montavilla and Parkrose schools and/or neighborhood associations. The Urban Greenspaces Institute and Portland Audubon Society could also help implement projects and secure grant funding.

### **Estimated Cost**

Cost associated with the aforementioned wildlife enhancement projects would be limited to labor, native plant stock, nest boxes, offsite disposal of plant waste as compost, and tools including the use of vehicles. City grants may help offset costs.



### Neighborhood Benefits

Wildlife enhancement projects could increase opportunities for wildlife viewing, especially for birds. Benefits also include an added intrinsic value from people being able to see wildlife activity and experience a connection with nature in an otherwise urban environment. These benefits would strengthen if ODOT allows people to legally enter the site from the I-205 path.

### Compatibility with Other Potential Uses

As mentioned in the section above, uses that increase the opportunities for people to view wildlife would be compatible. Other uses that would prohibit people from entering the site would also be compatible since they would less likely be disturbing. However, an added bonus to enhancing wildlife habitat is the opportunity for people to view species' activities.

A pedestrian/bicycle bridge over I-205 to Rocky Butte State Park could act as a constructed wildlife corridor for mammals, opening up the project site to more and diverse wildlife activity.



Before Ivy removal



After Ivy removal

# Maintain Current Status

## Description

It is important to consider that the introduction of no additional uses, activities or facilities on the project site may in effect be a land use element in and of itself. As of June 2006, the operating right-of-way contains a failed stormwater mitigation project, limited wetlands pockets, infrastructure left over from Rocky Butte Jail and I-205 construction, buried highway construction materials, tapped petroleum-contaminated soils, and evidence of over ten camps utilized by transients accessing the site.

## Associated Facilities

The current facilities mentioned within the existing conditions report highlight a variety of facilities that remain on the project site given maintenance of the site's current status as an operating right-of-way for ODOT.

## Space Requirements

There remain approximately 35 acres at the project site that encompass all five zones mentioned in the existing conditions report. This extensive acreage adequately accommodates the formal and informal activities occurring on the site but may be limited in the future. ODOT continues to explore and plan new transportation infrastructure investments including new lanes on I-205 and additional light-rail tracks that would require space to be diverted from the operating right-of-way.

## Access Requirements

Current access to the site is limited to the I-205 multi-use path and the Union Pacific Railroad maintenance access bridge. The limited number of access points enable ODOT to better manage its own operations and maintenance activities and still enable TriMet to maintain its existing light rail operations by controlling the flow of public access to the site.

## Ownership, Operations, Maintenance, Liability

ODOT continues to maintain ownership of the site in addition to several non-operating right-of-ways within the vicinity. In addition to maintaining and protecting its vehicular right-of-way through the site, its maintenance activities are limited to mowing the grassy areas of the project site once a year, maintaining the inlets and manholes accessed for cleaning purposes, and its various landscape and path maintenance responsibilities. ODOT also maintains a long-term lease agreement with TriMet for light rail operations through the site.



In terms of security, ODOT continues to install various signage as a security measure to deter trespassing on the site. The Portland Police Bureau is frequently called out to the project site to investigate incidents of crime and maintain public safety.

### **Estimated Cost**

The estimated costs of maintaining the current status of the site are included within ODOT's current budget for operations and maintenance activities. ODOT maintenance staff mow the grassy area once a year costing the agency between \$150 to \$500 annually based on salaries, fringe benefits, equipment and operational expenses.

### **Neighborhood Benefits**

In terms of neighborhood benefits, the nearby residents and a multitude of passive and active recreation users continue to use the site as a recreational asset as "available" open space in an area that remains park deficient yet undergoing significant growth potential. The site serves as a destination for biking, walking, jogging, off-leash dog walking, rollerblading, and other activities.

### **Compatibility With Other Uses**

The maintenance of site's current status as an operating right-of-way with no additional uses, activities or facilities considered for the site would be incompatible with all other suggested land use elements for the project site. Any suggested land elements occurring on-site would require a permitted use agreement with ODOT.

#### **At A Glance**

***No additional capital or ongoing costs to ODOT beyond current landscape and path maintenance activities***

***Potential acreage could be used for future expansion of I-205 and light rail***

***Project site still used for various passive and active recreation uses benefiting community***

***Limited current access points help control public access and secure the operating right-of-way***





# Appendix A - Additional Information

# Vegetation

Table 1: Vegetation within the open areas of the project site (Zones 1 to 4).

Common Name	Native/ Nonnative*
<b>Herbs</b>	
Small flowered lupine	Native
Bedstraw (cleavers)	Native
Large leaved lupine	Native
Giant vetch	Native
Bulbous bluegrass	Nonnative
Periwinkle	Nonnative
Velvet grass	Nonnative (d)
Self-heal	Native
Bull thistle	Nonnative
Vetch	Nonnative (d)
Moss	N/A (d)
Tall fescue	Nonnative (d)
Dovefoot geranium	Nonnative
Teasel	Nonnative
Meadow foxtail	Nonnative (d)
Clover	Nonnative (d)
Bermuda grass	Nonnative
Plantain	Native
Hairy cat's ear	Nonnative (d)
Tarweed	Native
Colonial bentgrass	Nonnative (d)
<b>Shrubs</b>	
Beaked Hazelnut	Native
Scotch broom	Nonnative
Himalayan blackberry	Nonnative
<b>Trees</b>	
Lombardy poplar	Nonnative (d)
Black cottonwood	Native (d)
Paper birch	Native
Douglas-fir	Native
Bitter cherry	Native
Fruit trees	Nonnative
Pine	Native
Big leaf maple	Native

\*(d) indicates a dominant plant species within each plant category.



Table 2: Vegetation with Zone 5.

Common Name	Native/ Nonnative*
<b>Herbs</b>	
Fringecup	Native
Western trillium	Native
Trailing blackberry	Native
English ivy	Nonnative (d)
Bedstraw (cleavers)	Native
Swordfern	Native (d)
<b>Shrubs</b>	
Huckleberry	Native
Thimbleberry	Native
English hawthorn	Nonnative
Himalayan blackberry	Nonnative (d)
Beaked hazelnut	Native (d)
Red-flowering current	Native
<b>Trees</b>	
Black cottonwood	Native
Horse chestnut	Nonnative
Douglas-fir	Native (d)
Holly	Nonnative

\*(d) indicates a dominant plant species within each plant category.

## Soils

Table 3: Sample soil pit characteristics.

Sample Pit	Depth (in)	Texture	Rooting depth (in)	Hydrology	Notes
SP 1	5	Gritty silt loam	4	Well-drained	Compact. Gravel and concrete throughout profile.
SP 2	10	Gritty silt loam	3	Well-drained	Large concrete chunks, gravel throughout profile.
SP 3A	3	Gritty silt loam	0.5	Well-drained	Compact. Angular gravel, cobble, and concrete chunks throughout profile.
SP 3B	10	Silt loam	8	Wet	Dark soils upper 3 inches of profile.
SP 3C	16	Silt loam	2	Well-drained	Pit 6 inches higher than SP 3B.
SP 3D	16	Fine silt loam	16	Wet	Some grit, but no rock or gravels. Chunks of sand and clay in profile.
SP 3E	16	Gritty silt loam	8	Drained	Dark soil. 1.5 feet above SP 3D.
SP 4	16	Gritty silt loam	6	Somewhat wet	Some sand. Large chunks of concrete, aggregate, and cobble throughout profile.
SP 5A	16	Silt loam	10	Well-drained	Loose soils.
SP 5B	16	Silt loam	10	Well-drained	Loose soils.

# Air Quality

This section provides a more-detailed discussion of existing and future air quality levels within the project site.

## Methods

The text presents estimated existing and future air quality levels based on vehicle emissions on I-205 and I-84. For this study, air quality levels were based only on vehicle emissions from the two freeways because relevant model input data was readily available.

The air quality assessment was developed using a general model for estimating vehicle emissions levels on Portland-area freeways. Model inputs include average daily traffic volumes, estimated free-flow vehicle speed, and length of highway segment under focus. 2004 and projected 2024 average daily traffic volumes for I-205 and I-84 were obtained from ODOT's Transportation Volume Tables. A 50 MPH free-flow speed was used, slightly below the 55 MPH posted speed on both freeways. Finally, a one-mile segment distance was used for each freeway. Model input also includes "emissions factors" for each air pollutant and air toxic. Emissions factors vary by time of year, and the "January" factors were used to estimate a worst-case scenario.

## Estimated Existing and Future Vehicle Emissions

Table 4 summarizes estimated daily vehicle emissions levels for several common vehicle emissions, including Volatile Organic Compounds, Carbon Monoxide, Nitrogen Oxide and Particulate Matter. The table also estimates emissions levels for air toxics including Benzene, Butadiene, Formaldehyde, Acetaldehyde and Acrolein.

Over the next two decades, emissions levels are expected to rise, corresponding with projected traffic volume growth on I-205 and I-84. Efforts were made to compare the emissions levels with Federal and State air quality standards, however differences in the measurement methodologies complicated this task. The primary conclusion drawn from this analysis is that increased air pollutants and toxics could adversely impact air quality near and within the project site. The impact of deteriorating air quality on potential land use alternatives in the project site however is not entirely clear.

Table 4: Estimated 2004 and 2024 Average Daily Vehicle Emissions I-84 and I-205 near Project Site

	Average Daily Emissions Kilograms per Day			
	2004		2024	
Pollutant	I-84	I-205	I-84	I-205
VOC	66.0	122.6	72.8	140.5
CO	1,142.3	2,021.9	1,259.7	2,432.2
NOX	159.6	296.4	176.0	339.7
PM10	3.8	7.0	4.2	8.1
PM2.5	2.6	4.9	2.9	5.6
Air Toxic	I-84	I-205	I-84	I-205
Benzene	2.0	3.7	2.2	4.2
1,3 Butadiene	0.2	0.3	0.2	0.4
Formaldehyde	0.7	1.3	0.8	1.5
Acetaldehyde	0.5	1.0	0.6	1.2
Acrolein	<0.1	0.1	<0.1	0.1

Notes:

VOC means "Volatile Organic Compounds"

CO means "Carbon Monoxide"

NOX means "Nitrogen Oxide"

PM10 and PM2.5 mean "Particulate Matter"



# Transient Activity

Table 5: Transient Activity by Description and Size (measured in diameter in feet).

TRANSIENT CAMP NO.	DESCRIPTION	DIAMETER (feet)
1	This camp is located on the north end of the wooded portion of Zone 5. The site is arranged in multiple levels with a three- or four-foot dropoff between the western and eastern sections of the camp. The site has been cleared in several places for tent placement. There are signs of fire in a small pit.	40
2	This camp is located further south along the trail from Camp 1 within the eastern, wooded portion of Zone 5. The site is sparsely littered with garbage. The site has been cleared in several places for tent placement.	23
3	This camp is connected to Camp 2, just off the trail near the eastern, wooded portion of Zone 5. The site is sloped and dotted with garbage and debris. There is a path between the middle of Camps 2 and 3 and the freight railroad tracks, highlighting the potential pedestrian access between these camps and the rail line and vice versa.	19
4	This camp is located just off the trail near the middle of the wooded portion of Zone 5. The site is significantly sloped and semi-cleared in spots to accommodate tents or sleeping bags. It is widely littered with garbage.	7
5	This camp is located just off the trail in the middle of the eastern, wooded portion of Zone 5. The site is cleared for placement of tents. There are signs of fire use on site. The site is littered with garbage.	17
6	This camp is located further south along the trail within the eastern, wooded portion of Zone 5. This particular site is located closer to the freight railroad tracks than the previous five sites to the north. The site is semi-cleared and distinctly littered with garbage and debris.	22
7	This camp is located further south along the trail within the eastern, wooded portion of Zone 5. This semi-cleared site is located very close to the freight railroad tracks. There were signs of bedding on the site including a pillowcase and comforter. The site also contained wheels from a shopping cart. There is a post with cloth highlighting the trail between Camps 6 and 7.	19
8	This camp is relatively sloped and located just off the trail within the southeastern wooded portion of Zone 5. The site is uncleared and cluttered with leaves, twigs and fallen branches. The site is also located very close to the freight rail tracks.	26
9	This camp is located on the south end of the wooded portion of Zone 5. The site contained a tent and tarp in use with bedding and debris located in the tent. The tent was closed and the tarp was tied to the branches of an adjacent tree. There were signs of clothing and a bicycle wheel near the site. There were also signs of fire use on the site. The site itself is located relatively close to the freight rail tracks.	31
10	This camp is located within the northern end of the site within Zone 1. The camp site is located in a patch of dirt found under an overpass over I-84 (just west of the railroad bridge to Maywood Park). There was burnt wood at the spot with logs around for sitting like a camp fire along with some litter. There are well-established trails leading to the spot on the east and west sides of the overpass.	5

# Zoning & Overlays

Table 6: Summary of Permitted and Non-Permitted Land Uses

Residential Categories	R7 Area Primary Uses	Open Space Area Primary Uses	General Industrial 2 Area Primary Uses
Household Living	Yes	No	CU
Group Living	CU	No	No
Commercial Categories			
Retail Sales and Service	No	L/CU	L/CU
Office	No	No	L/CU
Quick Vehicle Servicing	No	No	Yes
Vehicle Repair	No	No	Yes
Commercial Parking	No	No	CU
Self-Service Storage	No	No	Yes
Commercial Outdoor Recreation	No	CU	CU
Major Event Entertainment	No	No	CU
Industrial Categories			
Manufacturing and Production	No	No	Yes
Warehouse and Freight Movement	No	No	Yes
Wholesale Sales	No	No	Yes
Industrial Service	No	No	Yes
Railroad Yards	No	No	Yes
Waste-related	No	No	L/CU
Institutional Categories			
Basic Utilities	L/CU	L/CU	Yes/CU
Community Service	CU	CU	L/CU
Parks and Open Areas	L/CU	L/CU	Yes
Schools	CU	CU	No
Colleges	CU	No	No
Medical Centers	CU	No	No
Religious Institutions	CU	No	No
Daycare	L/CU	CU	L/CU
Other Categories			
Agriculture	CU	Yes	Yes
Aviation and Surface Passenger Terminals	No	No	CU
Detention Facilities	No	No	CU
Mining	No	CU	CU
Radio Frequency Transmission Facilities	L/CU	L/CU	L/CU
Railroad Lines and Utility Corridors	CU	CU	Yes

Yes = Allowed

L = Allowed, But Special Limitations

CU = Conditional Use Review Required



No = Prohibited conditional uses.

Following is a description and summary of each base and overlay Area affecting the project site.

### **Residential 7,000 (R7):**

R7 is a single-family zoning designation. The intent of this designation is to prescribe use and development regulations to create, maintain, and promote single-dwelling neighborhoods.

The site development limitations (i.e., height, setbacks, etc.) in the R7 Area vary depending on the use and/or the type of structure proposed. In general, structures other than those associated with institutional uses, are limited to 30 feet in height and institutional structures are limited to 50 feet in height. Setbacks vary as well, however because the project site is comprised of ODOT right-of-way and is bounded by transportation uses on all sides rather than traditional property lines, it is unclear at this time how setbacks would be applied. Most likely the setback limitations in the project site are set by ODOT, TriMet, and Union Pacific Railroad to assure a safe separation between the existing transportation uses and proposed uses in the project site. Compliance with the required setbacks to the nearest property line should also be confirmed, however. In addition to complying with the R7 Area and conditional use regulations, all nonresidential primary and accessory uses must also comply with Off-Site Impact Standards [Chapter 33.262 of the City of Portland Development Code], which regulates the impacts of non-residential uses, such as noise, vibration, odors, and glare.

### **Open Space (OS):**

The purpose of the OS designation is to preserve and enhance public and private open space to provide for outdoor recreation and pedestrian and bicycle connections, contrasts to the built environment, preservation of scenic qualities and environmental or sensitive areas, and to preserve the capacity and water quality of the stormwater drainage system. The designation prescribes development standards for both permitted and conditional uses.

The development standards in the OS Area are limited to setback regulations for permitted uses, and setback and parking regulations for conditional uses. As stated previously, because the project site is comprised of ODOT right-of-way and is bounded by transportation uses on all sides rather than traditional property lines, most likely the setback limitations on the project site would be set by ODOT, TriMet, and Union Pacific Railroad to assure a safe separation between the existing transportation uses and proposed uses on the project site. Compliance with the required setbacks to the nearest property line should also be confirmed, however.

In addition to complying with the OS Area and conditional use regulations, all nonresidential primary and accessory uses must also comply with Off-Site Impact Standards [Chapter 33.262 of the City of Portland Development Code], which regulates the impacts of non-residential uses, such as noise, vibration, odors, and glare.

### **General Industrial 2 (IG2):**

The IG2 Area is a general industrial Area that preserves lands for industry and prescribes uses and development standards that support economic vitality while protecting the health, safety, and welfare of the public, area character, and environmental concerns. Generally, uses in the IG2 Area are lower density and have larger setback regulations than other industrial Area categories.

In the IG2 Area there is no floor area ratio (FAR) or height limitations. The required setbacks are 25 feet from a street lot line, and 15 feet from a lot abutting an R-zone. The maximum allowable lot coverage is 85% of the project site's area, with a minimum of 15% of the project site's area required as landscaping. Because setbacks are measured from the lot line, and the project site consists of ODOT right-of-way that is bounded by transportation uses on all sides, it is anticipated that setbacks required by ODOT, TriMet, and Union Pacific Railroad to provide for safe separation between transportation and other uses will be more limiting than the Area setbacks, however compliance with the Area setbacks should also be confirmed.

In addition to complying with the IG2 Area and conditional use regulations, all nonresidential primary and accessory uses must also comply with Off-Site Impact Standards [Chapter 33.262 of the City of Portland Development Code], which regulates the impacts of non-residential uses, such as noise, vibration, odors, and glare.

### **Environmental Conservation Overlay Area (c):**

The purpose of the Environmental Conservation Overlay Area is to preserve the functions and values of resources that have been identified by the City as providing benefits to the public, while still allowing for environmentally sensitive urban development. The overlay Area prescribes regulations so that development is designed to be sensitive to the project site's protected resources.

An environmental conservation Area is comprised of both the resource area, and a 25-foot transition area that is measured inward from the environmental Area boundary. The transition area is not considered significant and functions as a buffer to the resource.

Unless specifically exempted, the regulations of the environmental overlay Area apply to all proposed development; removal, cutting, mowing, clearing, or poisoning of native vegetation listed in the Portland Plant List; grading, excavating, and filling; resource enhancement; and expansions of rights-of-way. Development that is exempt from the overlay regulations include:

- Maintenance and repair of development, operations, and improvements that exist, such as roads, public recreational trails, and utilities.
- Continued maintenance of existing gardens, pastures, lawns, and other planted areas, including the installation of new irrigation and drainage facilities, new erosion control features, and the installation of plants that are not listed on the Nuisance or Prohibited Plant Lists.
- Removal of trees that are on the Nuisance or Prohibited Plant Lists and that will not result in soil exposure or disturbance.
- Removal of a tree that is deemed hazardous by the City Forester or an arborist.
- Planting of native vegetation when done by hand.
- Public street and sidewalk improvements contained in an existing right-of-way used by truck or automobile traffic.
- Temporary project site investigative work.
- Installation of signage as part of public recreational trails.
- Additional disturbance for outdoor uses, such as garden or play areas that does not exceed 500 square feet, provided the total disturbance area doesn't exceed 3,500 square feet, and no trees over 6 inches are removed.
- Unpaved trails that are a maximum of 30 inches in width and that do not require trimming of vegetation more than a height of eight feet and a width of six feet and does not required native trees larger than six inches or native shrubs or conifers larger than five feet tall to be removed.
- Hand removal of trash, provided that native vegetation is not removed or damaged.

Compliance with the standards of the Environmental Overlay Area is determined either through the building permit process or the development permit process (including Conditional Use review). Modifications to any of the standards may only be approved through environmental review [Sections 33.430.210 – 33.430.280 of the City of Portland Development Code]. The development standards are detailed and specific to the type of use that is proposed. A proposed use may be subject to several sections, therefore it is important that a thorough review of all of the environmental overlay standards is made for any proposed use affecting the overlay Area.

#### **Aircraft Landing Overlay Area (h):**

The purpose of this overlay Area is to provide for safe operating conditions for aircraft in the vicinity of Portland International Airport by limiting the height of structures and vegetation.

All structures and vegetation within the overlay Area are subject to the height limits shown on the Aircraft Landing Area Map. The height limits are graduated from north to south with maximum height limits ranging from 380 feet in the most southerly area of the overlay zone to 280 feet at the northern terminus of the site.

An exception to the maximum Aircraft Landing Area height must be approved in writing by the Federal Aviation Administration in consultation with the Port of Portland.



# Transportation

This section provides a more-detailed discussion of existing transportation characteristics within and near the project site. The following text documents existing transportation facilities including highways, streets, transit corridors and trails. This appendix also identifies planned transportation projects relevant to the project site as well as proposed transportation-related land uses where applicable.

## Methods

Transportation information and data came from a variety of sources. ODOT, City of Portland and TriMet documents provided traffic volumes and planned transportation projects, while ODOT and TriMet staff advised the project team on long-term transportation needs. ODOT and TriMet staff also provided information regarding maintenance activities and existing intergovernmental agreements relevant to the project site. Union Pacific Railroad staff provided information regarding existing rail activities as well as future needs along the rail corridor. The project team also visited the project site between January and May 2006 to gather additional transportation-related data.

## Freeway and Street System

The project site is generally bounded on all sides by I-205 and I-84. Accessing Portland's eastern neighborhoods and suburbs, I-205 forms the western project site boundary. The freeway handled approximately 126,000 daily vehicles near the I-84 interchange in 2004, and daily volumes are expected to reach 145,000 in 2024. I-84 forms the eastern project site boundary and connects downtown Portland with Gresham, Troutdale and the Columbia River Gorge. Serving about 68,000 daily vehicles near NE Halsey Street in 2004, I-84 is expected to handle about 75,000 daily vehicles at this location in 2024.

Two public streets currently pass through the project site but do not provide direct access. NE Halsey Street passes over the south end of Zone 4, and NE 102nd Avenue passes over Zone 1. Within the project site, two ODOT gravel maintenance roads pass between the project site's north and south ends. ODOT provides as-needed maintenance on the I-205 multi-use path as well as grass-mowing about once per year.

ODOT's Final 2006-2009 Statewide Transportation Improvement Program identifies two short-term roadway improvement projects near the project site. The document identifies repair work on the NE 102nd Avenue overpass scheduled for 2006, along with a 2008 pavement overlay on I-84 between I-205 and NE 181st Avenue. The Portland Transportation System Plan proposes "pedestrian enhancements" on NE 102nd Avenue between NE Sandy Boulevard and NE Brazee Street (a specific year and other project information were not provided). ODOT has identified a long-term need to widen I-205 in both directions near the project site. Although a timeframe and specific details have not been established, the project may include "collector/distributor" roads paralleling the freeway.

## Transit

Completed in 2001, TriMet's MAX light rail passes through the project site's western edge, specifically through Zones 1, 2, 3 and 4. Providing service between Portland International Airport and downtown Portland, the MAX Red Line makes approximately 75 weekday roundtrips through the project site. The nearest light rail station is located at Gateway Transit Center, just south of the project site. The transit center includes a park-and-ride lot and provides access to several bus lines and the MAX Blue Line. Between Gateway Transit Center and Portland International Airport, the Red Line served a combined 8,200 daily passenger boardings/alightings in 2005, and this number is expected to reach about 15,000 by 2015. Trains operate on a single track between Gateway Transit Center and the NE Halsey Street overpass, and on two parallel tracks through most of the project site.

Two TriMet maintenance buildings exist within the project site. A small maintenance building is located just east of the light rail tracks in Zone 4, and a slightly larger building is located near the tracks in Zone 2. Cyclone fences with gates surround both structures. "High-rail" maintenance vehicles access the project site (approximately one time each day) via the light rail tracks, and a small concrete pad in Zone 2 enables operators to maneuver high-rail vehicles between the tracks and nearby gravel maintenance roads.

Relevant to the project site, TriMet's short-term transit improvement plans include new light rail service between Gateway Transit Center and Clackamas Town Center in 2009. Longer-term projects include a potential light rail extension to Vancouver, Washington via I-205, which could increase the number of trains passing through the project site. Within the project site, the agency's light rail "as-built" drawings include a potential "Rocky Butte" station in Zone 2, but TriMet staff indicate that a station would only be considered if warranted by surrounding land use activities and if approved by ODOT. The agency has also identified the project site for a potential future light rail facility to store and maintain trains. With existing facilities at Elmonica (in Beaverton) and Ruby Junction (in Gresham) nearing capacity, future light rail service ex-

pansions may trigger the need for additional facilities (though a specific timeframe is unknown). TriMet views the project site as an optimal location given its size and proximity to existing and proposed light rail lines. Conceptual facility plans include a new vehicle access bridge south of Zone 4 along with an expanded light rail bridge in the same area. TriMet also indicates that the City of Portland initially proposed a park-and-ride lot in the project site in conjunction with a Gateway Transit Center redevelopment project. The lot would have replaced Gateway Transit Center's existing park-and-ride facility, but the proposal has since been withdrawn.

### **Freight Rail**

The Union Pacific Railroad parallels the eastern project site edge along I-84 in Zones 1, 4 and 5. The single-track rail accesses intermodal facilities in Portland and Troutdale, and also connects with other regional railroads. Primarily hauling freight goods, approximately 10 to 12 trains (each usually 1 mile long) pass through the project site daily. In Zone 4, a narrow gravel maintenance road parallels the railroad's east side. The road switches to the railroad's west side in Zone 5 and continues into Zone 1. At the project site's far northeast corner, the maintenance road crosses a 12- to 15-foot-wide bridge leading to an access gate (restricted to railroad maintenance vehicles) at NE Fremont Street. ODOT constructed the bridge as part of the I-84/I-205 interchange project in 1983.

Railroad staff indicate that freight rail traffic is increasing, and train volumes within the project site could grow by up to 50 percent in future years. Although the agency maintains a 50-foot right-of-way in the project site, there are currently no plans to expand rail capacity.

### **Non-Motorized System**

The I-205 multi-use path follows the project site's western edge, passing through Zones 1, 2, 3 and 4. Stretching about 15 miles between Gladstone, Oregon and Vancouver, Washington, the 12-foot wide path was built in tandem with I-205 and is owned and maintained by ODOT. From Gateway Transit Center, the path enters the project site's south end on a relatively narrow bridge spanning the Union Pacific Railroad tracks and I-84 (the bridge is attached to the I-205 over-crossing). The path parallels the adjacent light rail tracks before following the alignment of a vacated road in Zone 1. The path then crosses over two bridges spanning the I-84/I-205 interchange before entering Maywood Park north of the project site. In other parts of Portland, this path connects with other regional trails including the I-84 multi-use path and the Springwater Corridor Trail.

ODOT collected the most recent I-205 path bicycle/pedestrian volume data in 1999. A one-day count at SE Yamhill Street (about 1 mile south of the project site) identified about 140 bicyclists and 70 pedestrians. Historical counts dating to the 1980s show an overall decline in bicycle/pedestrian volumes. Some advocacy groups attribute the decline to poorly-designed path crossings at major streets. Portland's Transportation System Plan includes a short-term project to address street-crossing issues on the I-205 path south of the project site. Neither ODOT nor the City of Portland has estimated future bicycle/pedestrian volumes for this path.

Several informal trails also exist within the project site. Numerous dirt bike trails are located east of the I-205 path in Zones 2, 3 and 4. Smaller informal trails associated with transient activity exist in the wooded portions of Zones 1 and 5.



# Appendix B - External Documents



# Oregon

Theodore R. Kulongoski, Governor

Department of Transportation

District 2B

9200 S.E. Lawnfield Road

Clackamas, OR 97015

(503) 653-3086

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April 4, 2006

Jessica Sarver  
Gateway Gardens Feasibility Study Team  
PO Box 369  
Lake Oswego, OR 97034

FILE CODE:

RECEIVED

APR 26 2006

City of Lake Oswego  
Community Development Dept.

RE: Site Discussion

This is in response to our meeting on April 17<sup>th</sup> where you shared your PSU Workshop Project for the Rocky Butte Area along I-205. While ODOT considers various proposals for uses of the right of way, there are issues regarding this site that you should be aware of.

The Rocky Butte area is considered operating right of way. This is different than non-operating which is considered surplus. For those surplus properties ODOT desires to sell them off providing no future transportation need is identified.

Today, the Rocky Butte property is owned and maintained by ODOT. Tri-Met does have a light rail line through this site which is considered to be a part of the transportation system. They have daily access to this area for operational needs relating to the light rail system. ODOT mows this area about once a year at a cost of approximately \$2,000. There are a few inlets and manholes that are accessed for cleaning purposes and landscape and trail maintenance responsibilities.

In the future, ODOT will need to widen I-205 in both directions and there is a plan for a collector/distributor (CD) road through this area. The alignment for the CD is not known at this time. When we added impervious surface (additional lanes), we are required to provide for water quality facilities to treat storm water. OTAK in the I-205 Future Storm water Analysis Report identified the Rocky Butte area as a potential site for these facilities. Tri-Met in their preliminary Airport Light Rail plans identified a future park and ride at this location although no plans for access were identified in those plans. So it's safe to say there is a future for this site. What that will eventually be we don't know yet.

The Rocky Butte site does have some constraints. Access is limited to the I-205 trail or through a gated access off of Fremont across a structure built for railroad access. Public use of this access would be difficult to get if at all since the alignment in part is across railroad property along a very active rail line. The treed area in Rocky Butte is identified by the City as an environmental zone. This restricts what can be done with that area. The fill on the south side of the property is much of the concrete structure material taken



off the Banfield freeway when that was reconstructed in the mid 1980's. At times, rebar finds its way to the surface creating problems for mowers, tires and can pose a safety concern for employees. Because of limited access, fire and police find it difficult to access this site on any routine basis. In an emergency, they would likely use the trail except for the large fire trucks.

There are a few more issues you should be aware. Since there is limited access, there tends to be some transients living in the Rocky Butte area. There are health and safety concerns for those who wander off the trail into the transient areas. Another issue is liability. Whatever is proposed, ODOT would expect to be held harmless in any civil or criminal action brought about as a result of any proposed development. And lastly, anything that brings more people into an area also brings higher expectations on maintenance. If we could get the public to take responsibility to clean up after themselves, much of that would go away. An option we encourage is adopting out an area for clean-up.

I have identified a lot of concerns and issues relating to the use of Rocky Butte. Much of this I believe can be worked through with the right proposal. That process starts with a request to the District and ends with a permit to use the property in some agreed plan. The permit allows conditional use until such time ODOT needs the property for a future mitigation or transportation use.

If you have any questions, please feel free to contact me.

Sincerely,



Larry Olson

ODOT, District 2B Manager

Cc Karla Keller  
Gary Hunt  
Bobby Walker

# Tri-Met Light Rail As-built Drawings

MATCHLINE 545+00

SEE DRAWING U3A234

PLUG ABANDONED  
18" AT MANHOLE  
WITH GROUT

18" STORM TO BE ABANDONED  
AND RELOCATED AS PART  
OF DRAINAGE DESIGN  
SEE DRAWING C3A420

ODOT 12" STORM FIELD  
INLET AND MANHOLE  
TO BE RELOCATED PER  
DRAWING U3A260

ELECTRICAL IS ABOVE TUNNEL

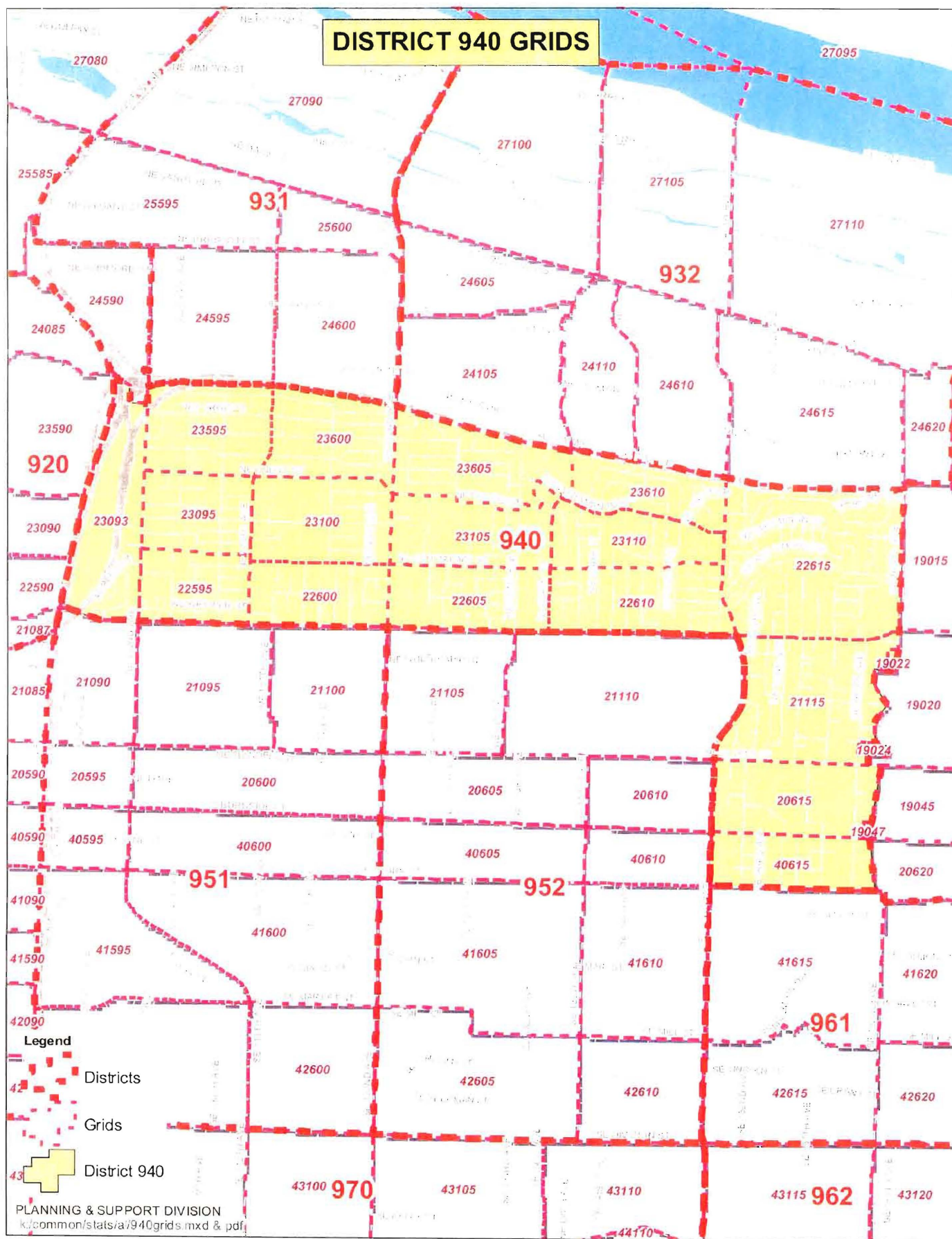
30" STORM  
NO RELOCATION  
REQUIRED

SEE DRAWING U3A

MATCHLINE 559+00

MATCHLINE 570+00









# Appendix C - Sources

# Sources

## Part I- Site & Project Overview

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